Service Manual

Digital Copier

DP-150

Service Manual Section
DP-150

Parts Manual Section
DP-150

Panasonic

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Schematic Diagram

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result serious injury or death.

For U.S.A

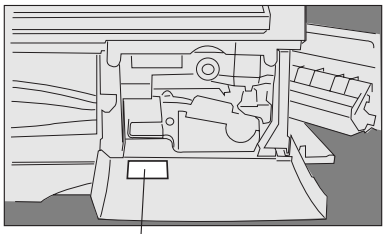
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment on a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Any unauthorized changes or modifications to this equipment would void the users authority to operate this device.

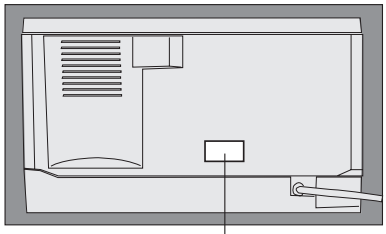
For U.S.A

For U.S.A

Caution
This product utilizes a laser.
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



DANGER-Invisible laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.
FFPTE2479



Product complies with DHHS Rules 21 CFR Subchapter J in effect of date of manufacture.
Matsushita Graphic Communication Systems, Inc.
Utsunomiya, Tochigi, Japan
MANUFACTURED:
FFPTE2327

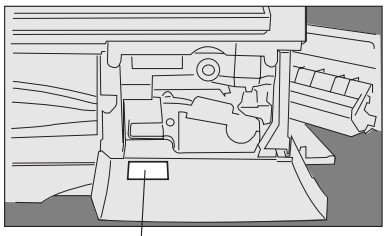
Label when manufactured in Japan.

Product complies with DHHS Rules 21 CFR Subchapter J in effect of date of manufacture.
Matsushita Graphic Communication Systems, Inc.
Taytay, Rizal, Philippines
MANUFACTURED:
FFPTE2327

Label when manufactured in Philippines.

Caution

This product utilizes a laser.
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



ATTENTION:
Rayonnement laser invisible dangereux en cas d'ouverture et lorsque la sécurité est neutralisée.
EXPOSITION DANGEREUSE AU FAISCEAU.

PELIGRO:
Cuando se abre y se invalida el bloqueo, se producen radiaciones invisibles de láser.
EVÍTESE LA EXPOSICIÓN DIRECTA A TALES RAYOS.

CAUTION
Invisible laser radiation when open and interlocks defeated.
AVOID EXPOSURE TO BEAM.

VORSICHT:
Unsichtbare Laserstrahlung, wenn Abdeckung geöffnet und Sicherheitsverriegelung überbrückt.
NICHT DEM STRAHL AUSSETZEN.

FFPTE2584

Caution: Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

For Sweden, and Denmark

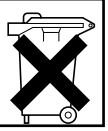
VARNING!
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!
Lithiumbatteri—Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Lever det brugte batteri tilbage til leverrandoren.

CAUTION!
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

For Holland

NL Batterij niet weggooien, maar inleveren als KCA.



For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.
This appliance is supplied with a moulded three pin mains plug for your safety and convenience. A 13 amp fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 13 amps and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR OFFICE THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.
If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

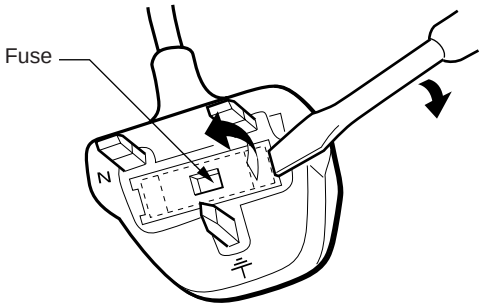
WARNING: THIS APPLIANCE MUST BE EARTHED.

IMPORTANT: The wires in this mains lead are coloured in accordance with the following code:

Green and Yellow	:Earth
Blue	:Neutral
Brown	:Live

As the colours of the wires in the main lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by letter E or by the safety EARTH symbol "⏚" or coloured GREEN or GREEN-AND-YELLOW.
The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

How to replace the fuse.
Open the fuse compartment with a screwdriver and replace the fuse.



Section I General Description

1. 1 Specifications

<General Specifications>

Type:	Desk top (scanner and printer)	
Copy Process:	Laser recording method + Electrostatic photographic method	
Development Process:	Mono-component	
Image Control:	Digital control	
Photoreceptor:	OPC	
Fusing System:	Heat and Pressure	
Maximum Copy Size:	Legal (8.5" X 14") B4 (257mm X 364mm)	
Paper Feed:	Front loading universal	
	Sheet bypass	
Paper Capacity:	Paper tray :	250 sheets
	Sheet bypass :	50 sheets/25 sheets (when duplexing)
Copy Size:	Legal, Letter-R, Invoice	
	A4R, A5	
Exit Tray Capacity:	200 sheets	
Ambient conditions:	Temperature :	50-86˚ F/10-30˚C
	Relative humidity :	30-80% (non condensing)
Noise Level:	Standaby :	32dB
	Operation :	54dB
Warm Up Time:	Approximately 20 seconds	
Power Source:	AC 120V+/-10%, 8.0A, 50/60Hz	
	AC 220V - 240V+/-10%, 4.5A, 50Hz	
Dimensions:	19.5" (W) X 17.2" (D) X 10.7" (H)	
	496 (W) X 438 (D) X 273 (H) mm	
Weight:	41lb/18.6kg	
Paper Weight Range:	Normal paper :	20lb/80g/m^2
	Ranges :	16 - 24lb/60 - 90g/m^2 (paper tray)
		15 - 34lb/55 - 130g/m^2 (sheet bypass)
Special Paper:	OHP, Label (Xerographic)	
	(Via sheet bypass)	

<Copy specifications>

Resolution:	600 dpi	
Gradation:	256 steps (photo mode)	
First Copy Time:	7.9 sec. (LETTER R/A4R: manual exposure)	
Ratios:	Enlargement (fixed ratio) :	1.29 (For North America)
		1.41 (Except North America)
	Reduction (fixed ratio) :	0.79, 0.65, 0.61
		(For North America)
		0.87, 0.82, 0.71
		(Except North America)
	Zoom :	50 % to 200 %
		(by 1 % step)
Continuous Copy Speed:	Letter R/A4R :	15 sheets/minute
Continuous Copy Count:	99 sheets	

* Specifications are subject to change without notice.

1. 2 Features

1. Advanced digital technology
   1) This copier uses advanced digital technology to ensure high reliability and offers such advanced functions as toner save.

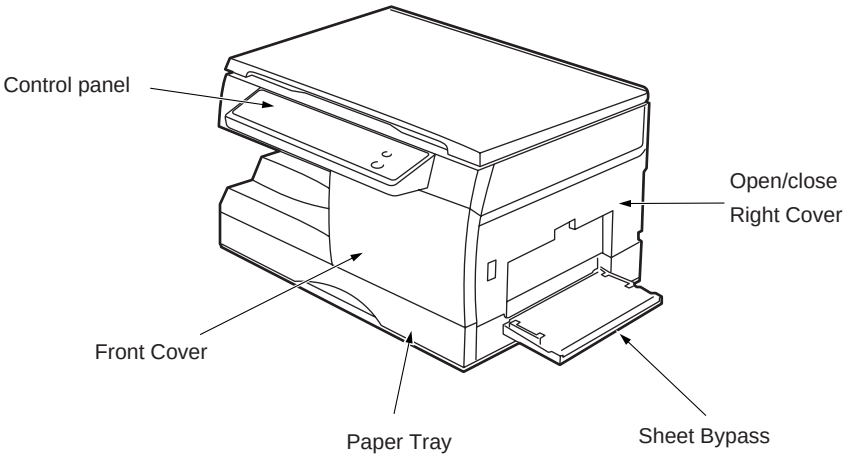
2. Quick operation
   First copy time of 7.9 seconds.

1. 3 New Functions

1. Toner save mode
   This feature unable you to get higher copy yield on your toner save mode.

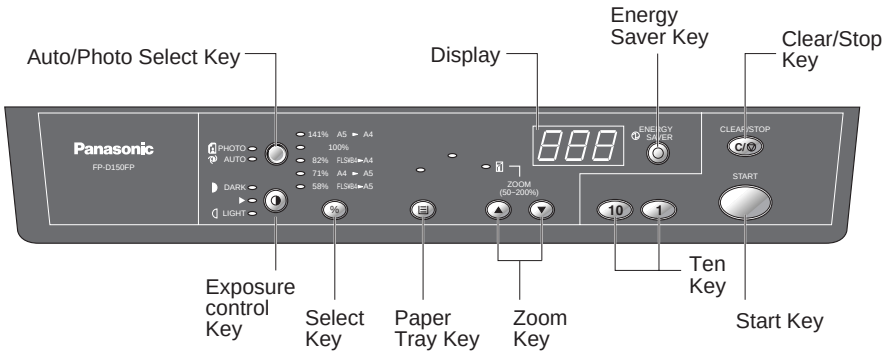
2. Zoom (50% to 200%)
   Making copies with variable zoom ratios from 50% to 200% by 1% step.

1. 4 Systems


Control panel
Open/close
Right Cover
Front Cover
Paper Tray
Sheet Bypass

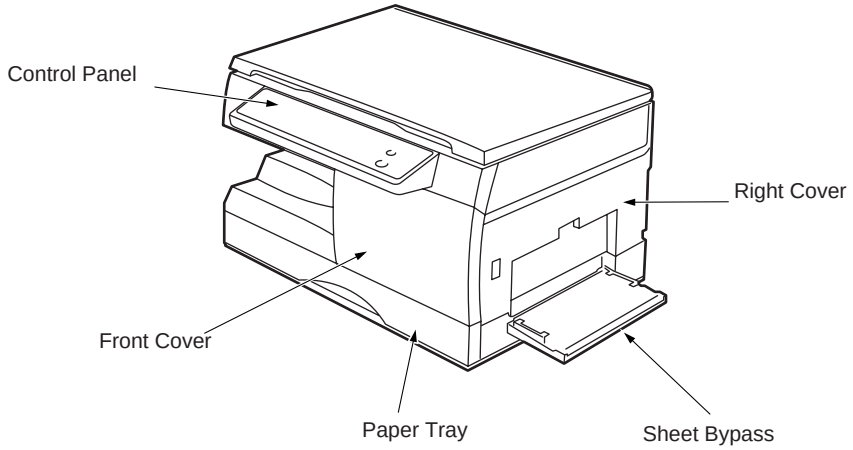
1. 5 Control Panel

• DP-150

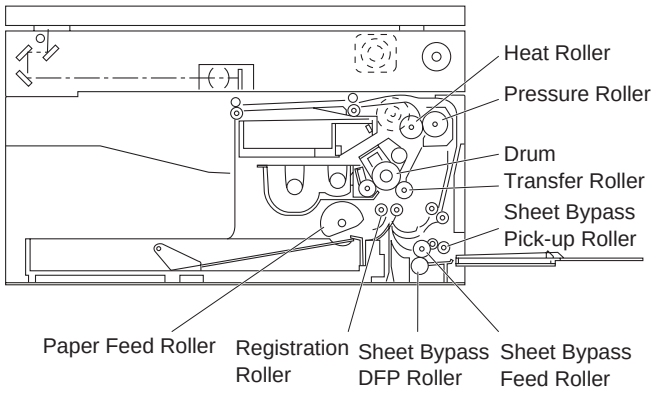


1. 6 Component Location

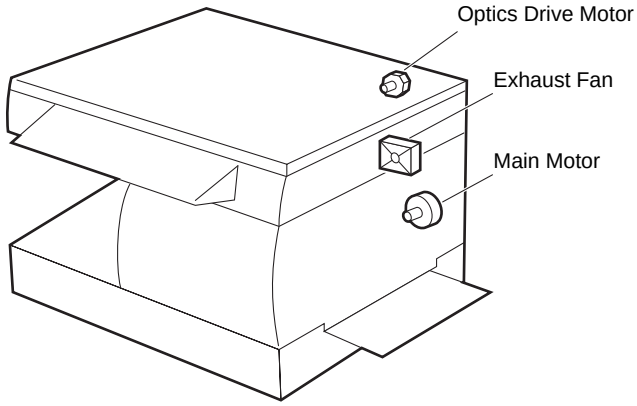
1. Outer View



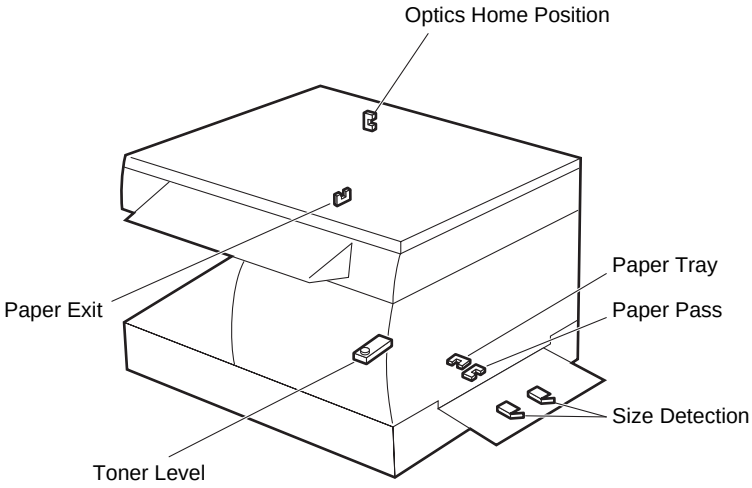
2. Inner View



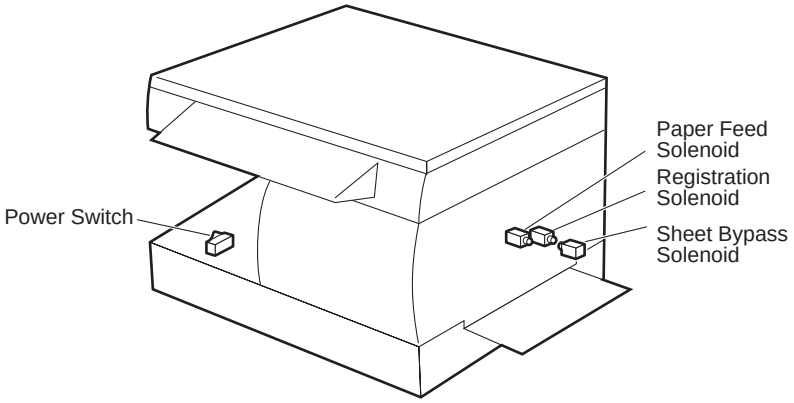
3. Fan/Motor Location



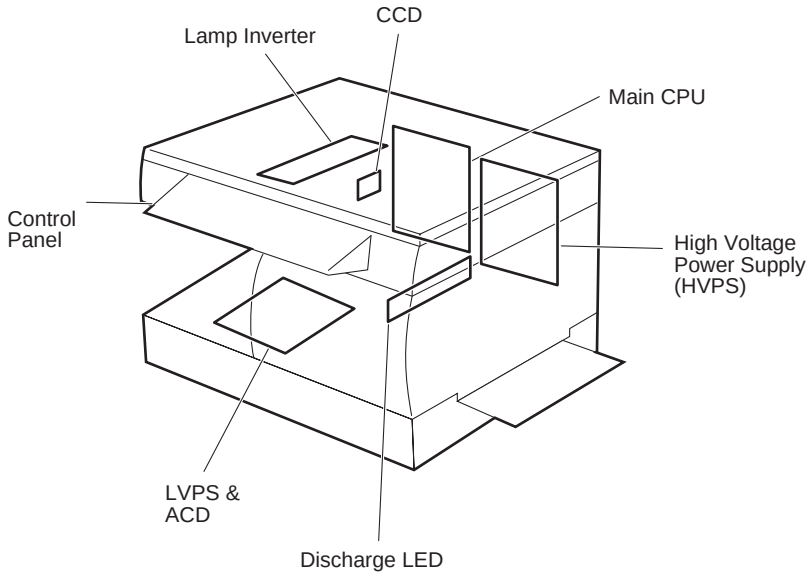
4. Sensor Location



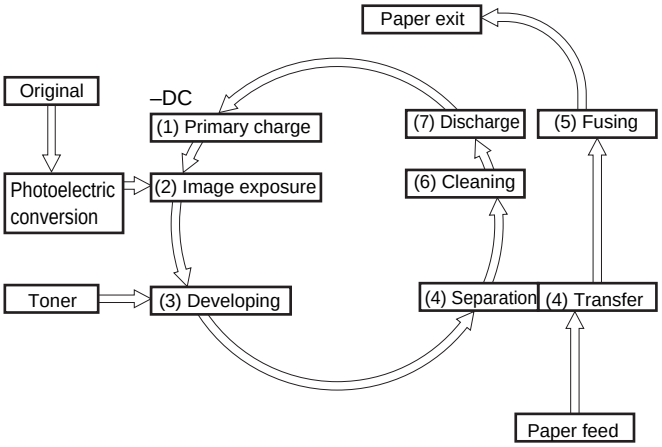
5. Solenoid/Switch Location

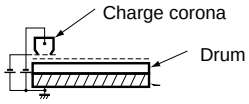
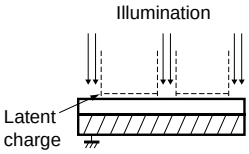
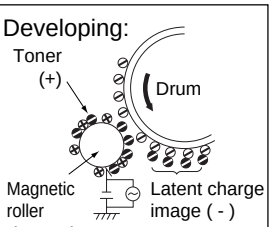
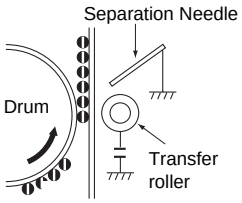
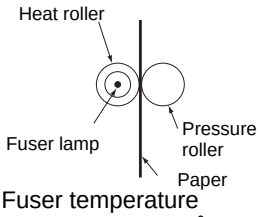
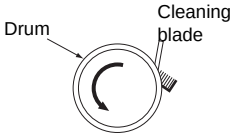
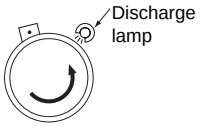


6. PCB Location



1. 7 Copy Process

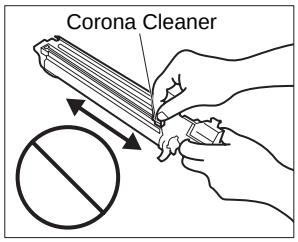


Primary Charge:  Drum surface approximately-680V DC	Image Exposure:  	Developing:  Bias voltage: DC –400V AC 1.5kVP-P
Transfer/Separation  	Fusing:  Fuser temperature approximately 190˚C	Cleaning: 
Discharge lamp:  		

1. 8 Precautions for Consumables

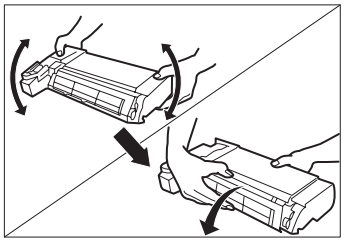
(1) Photoreceptor drum

- Do not touch the surface of the drum with your hands.
- Stand the drum with the drum gear up for storage.
- Be careful not to put water, oil, saliva and/or dirt on the drum.
- Do not hit or scratch the surface of the drum.
- Do not store the drum in a hot and humid area.
- Avoid the direct sunlight or other strong light.
- Do not expose the drum to the chemical gas or vapor.
- Cover the drum anytime it is removed from the copier.
- Do not use the corona cleaner unless dirty copy appears. (The corona cleaner may damage the corona wire surface.)



(2) Developer

- Be careful not to let foreign matter into the magnet roller unit.
- Do not touch the sleeve surface with your hands.
- Do not stand the cartridge on end.
- Do not bang the cartridge.
- Do not store the cartridge in a hot and/or humid area.



- Shake the cartridge as illustrated several times and install it into the copier.

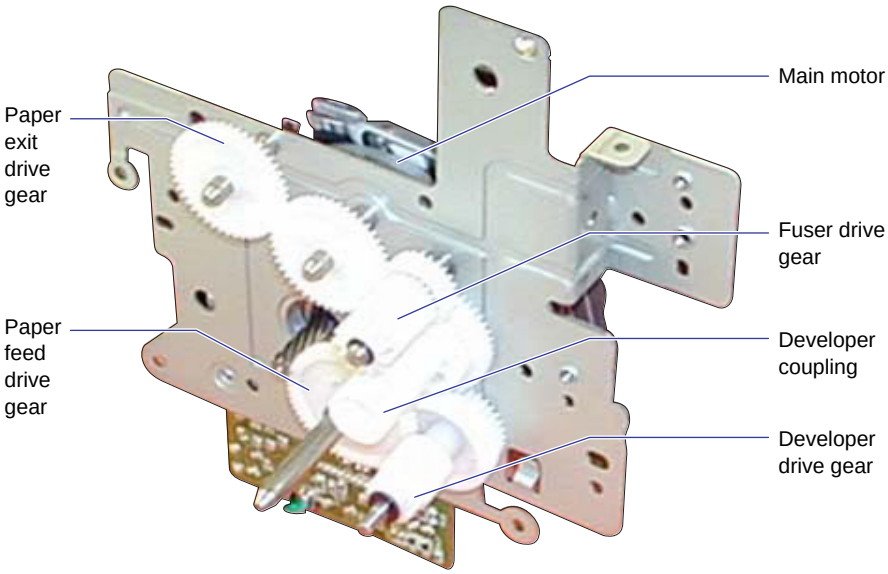
(3) Safety and hygiene

- Be careful not to inhale the toner.
  Toner can easily dust and become airborne, so handle carefully.
- When installing the developer, be careful not to let toner cloud. If you inhale it by accident, wash out your mouth well. If toner sticks to your skin, wash it off with soap.
- Regarding toner on clothes, vacuum or brush before washing with soap. Do not use benzine, alcohol or thinner. Their use may be responsible for stains by melting the components of toner.
- Use a vacuum for the toner on the floor or table and wipe it off with a cloth with a neutral detergent.
- Keep toner away from flames. It is not inflammable but will burn if exposed to flames.
- Waste consumables (photoreceptor and developer) should be recycled.
- When using solvents such as IPA, read and follow the instruction carefully. Use gloves and eye protection.

Section II Mechanism

2. 1 Main Drive

The driving mechanism of the machine is as follows.



Motor name	Driving method	Driving unit
Main motor	DC24V driving	● Rotation of the photoreceptor drum ● Developer unit, Paper feed unit, Paper transport unit, Fuser unit, Paper exit unit

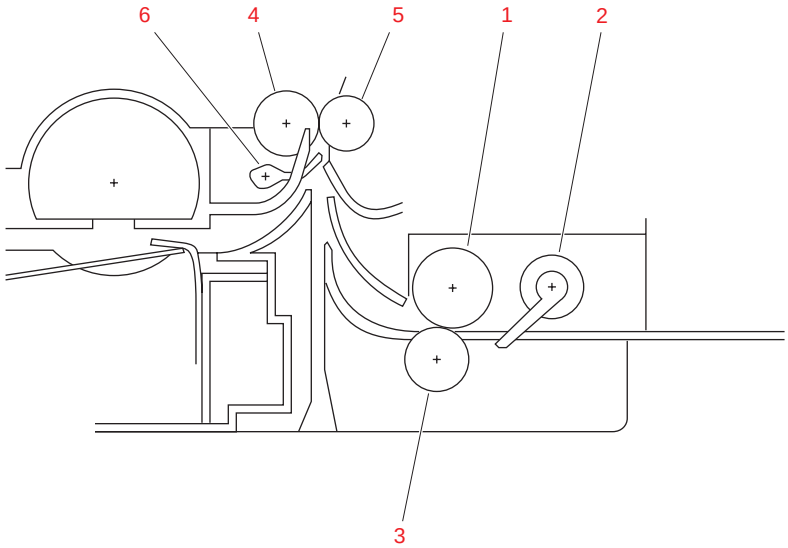
2. 2 Operations

1.Sheet Bypass

1)Construction of the sheet bypass

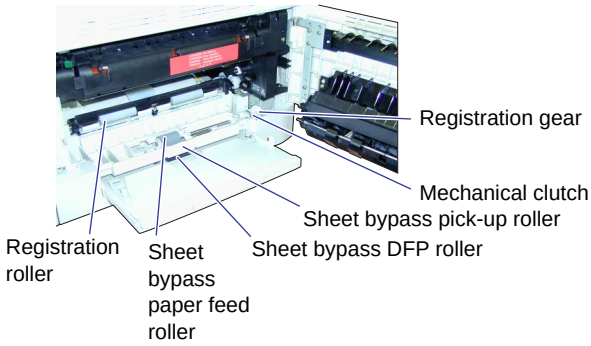
● Sheet bypass consists of a sheet bypass paper feed unit and a registration roller unit.

	Component name	Description
1	Sheet bypass paper feed roller	Feed the paper from the sheet bypass pick up roller to the registration roller.
2	Sheet bypass pick up roller	Send the paper from the sheet bypass tray to the paper feed roller.
3	Sheet bypass DFP roller	Avoid feeding two sheets of paper at the same time.
4	Registration roller	Time the lead edge of the paper with the developed image on the drum.
5	Registration roller	Let the paper hit between registration rollers and register it.
6	Paper pass sensor	To detect proper registration of the copy paper at the registration rollers.



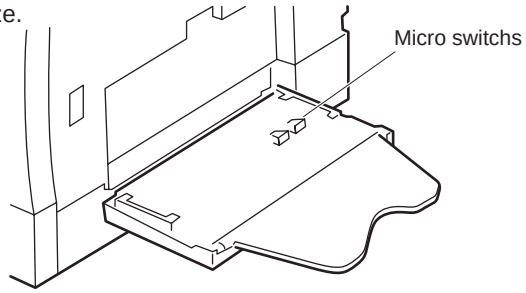
2) Operation of the sheet bypass paper feed unit

- When starting copying with the sheet bypass selected, the rotation of the main motor is transmitted to the transmission gear via drive gears and to the registration roller gear in the sheet bypass paper feed unit. The rotation of the registration roller gear is transmitted to the sheet bypass solenoid via middle roller.
- When the sheet bypass solenoid is turned ON, the sheet bypass pick up roller comes down and touches the paper in the tray. At the same time the stopper is released and the tray is ready to feed the paper.
- When the sheet bypass clutch is turned ON, the sheet bypass pick up roller touching the paper and the sheet bypass paper feed roller start rotating to send paper into the machine.
- The paper advances then stops and forms a buckle (skew correction) at the registration rollers. Then the sheet bypass clutch is turned OFF and the sheet bypass paper feed and sheet bypass pick up roller stop. At the same time the sheet bypass solenoid is also turned OFF and the sheet bypass pick up roller lifts up.
- The registration roller solenoid energizes to rotate the registration roller after a predetermine time elapses after the optics system (uniform-velocity unit). Accordingly the paper is sent to the image transfer unit and the original and copy paper are registered there.



4) Sheet bypass paper size detection

● The paper size detecting micro switchs are attached to the sheet bypass and detect the paper size.

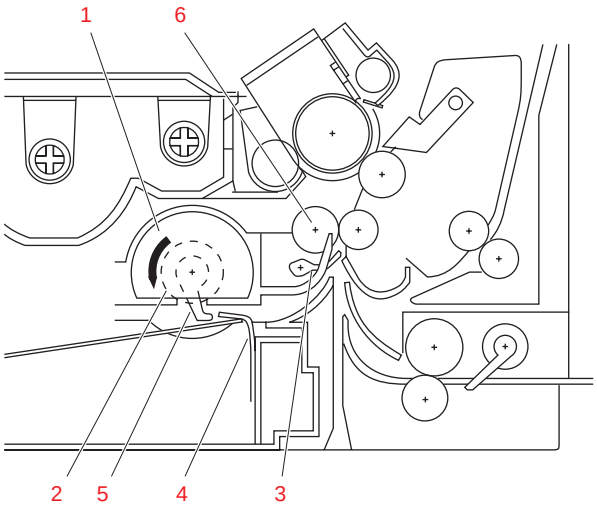


2. Paper Feed Unit

1) Construction of the paper feed unit

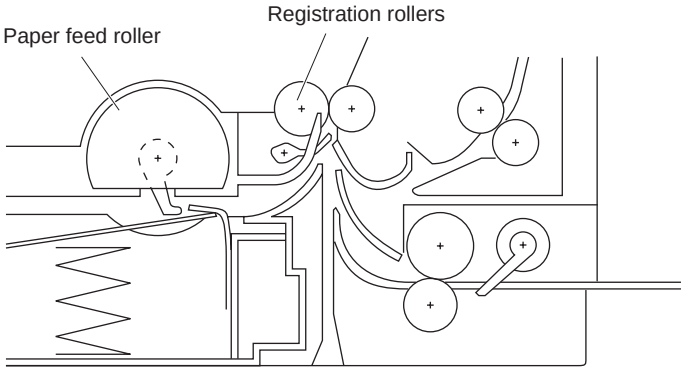
● The composition is as follows.

	Component name	Description
1	Paper feed roller	Feed the paper.
2	Paper feed solenoid	Push the pick up roller to the paper.
3	Paper pass sensor	Detects paper is properly registered at the registration rollers.
4	Paper separation finger	Avoid feeding two sheets of paper at the same time.
5	Paper detecting sensor	Detect paper in the paper feed tray.
6	Registration roller	Let the paper hit between registration rollers and register it.



2) Operation of the paper feed tray

- The paper tray sensor detects the paper tray is properly postioned in the copier.
- The spring under the bottom plate of the tray then lifts paper.
- With the Start key, the main motor starts rotating and transmits the rotation to the middle gear via drive gears.
- Accordingly the paper feed solenoid is turned ON. The paper feed roller starts rotating to send the paper in the tray to the registration rollers.
- The paper separation fingers prevents double sheet feeding.
- The registration solenoid starts working to rotate the registration roller when the defined time elapses after the optics system starts (uniform-velocity unit). Accordingly the paper is sent into the machine and the original and copy paper are registered there.

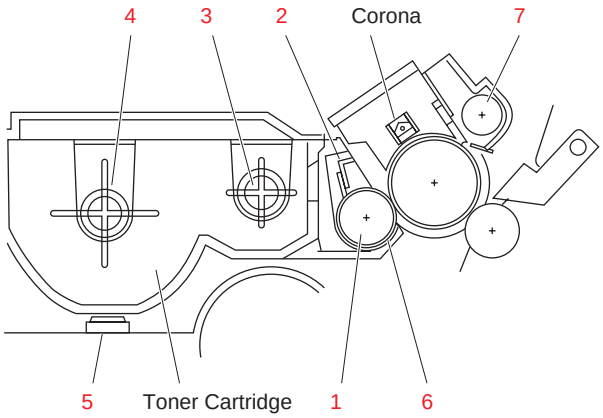


3.Toner Cartridge

1)Construction of the Toner Cartridge

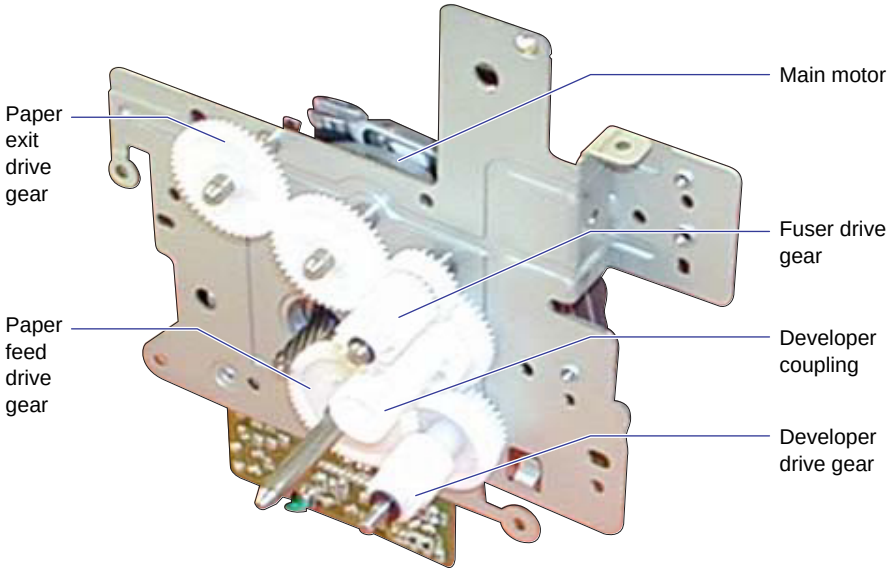
- The developer unit consists of the magnet roller, agitator 1 and agitator 2.
- Toner is mixed by the agitator 1 and 2, then transported onto the developer sleeve. Toner on the developer sleeve adheres to the electrostatic latent image on the drum by AC bias for development.
- The developer blade charges toner and controls the thickness of toner on the sleeve.
- The toner level sensor is placed under the toner cartridge to detect the toner level.
- The developing performance is enhanced by using mono-component toner.
- The developing unit also contains the recycling system. Toner is collected and sent to the waste toner box.

	Component name	Description
1	Magnet roller	Transport toner onto the drum.
2	Developer blade	Charge toner and control the thickness of toner on the sleeve.
3	Agitator 2	Transport toner to the magnet roller.
4	Agitator 1	Transport toner to the agitator 2.
5	Toner level sensor	Detect the toner level.
6	Coupling	Keep the distance between the magnet roller and the drum.
7	Collection screw	Collect the toner collected by the cleaning blade.



2) Driving developer

● The rotation of the main motor is transmitted to the developer drive gear via some gears. The developer unit is connected to the machine with gears and linked with the mixing mill gear and transport screw gear to mix and transport toner. The transport screw coupling is linked with the waste toner screw to collect waste toner.



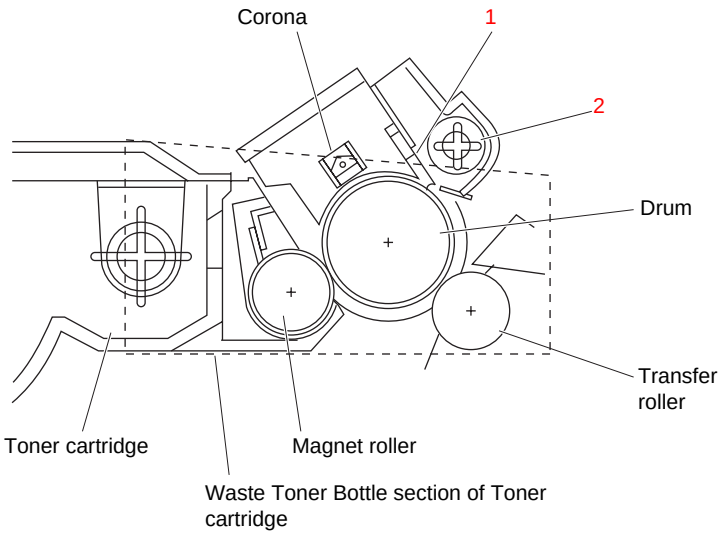
3) Cleaning drum

- The toner remaining on the drum is scraped off by the cleaning blade after the development and transfer.
- The cleaning blade is fixed and pressed on the drum surface to remove the toner on the surface.
- The removed toner is transported to the front area of the drum by the toner transport screw.
- The toner receiving sheet in the toner collecting contacts the drum surface to prevent the toner that is scraped off by the cleaning blade from falling into the paper path.

4) Collecting toner

- The waste toner from the drum is transported to the front of the main body by the toner transport screw.
- The toner transport screw is connected to the waste toner bottle.

	Component name	Description
1	Cleaning blade	Scrape the toner off the drum.
2	Toner transport screw	Transport the waste toner to the front of the toner cartridge



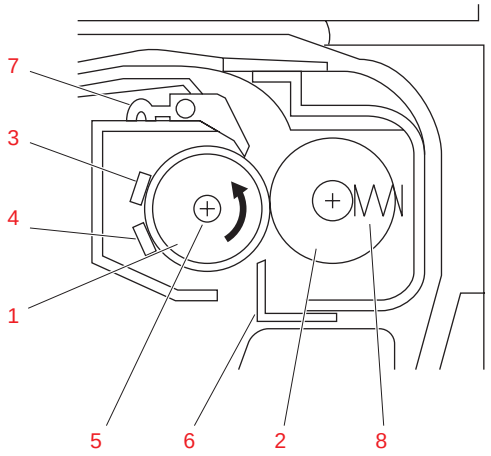
4.Fuser Unit

1)Construction of the fuser unit

● The composition is as follows.

	Component name	Description
1	Heat roller	Fuse toner onto paper by heat. (Aluminum + Teflon coating)
2	Pressure roller	Fuse toner onto paper by pressing paper to the heat roller. (Silicone rubber + Fluorine plastic tube)
3	Fuser thermostat (X2)	Safety device. Detect the abnormally high temperature and shut off the power for the heater lamp.
4	Fuser thermistor	Temperature sensor. Detect the surface temperature of the heat roller to control the temperature to the defined value.
5	Fuser lamp	Halogen lamp for fusing
6	Fuser infeed guide	Guide paper to the fuser roller.
7	Fuser separation finger	Separate paper from the heat roller to avoid a paper jam.
8	Pressure spring	Press the pressure roller against the heat roller.

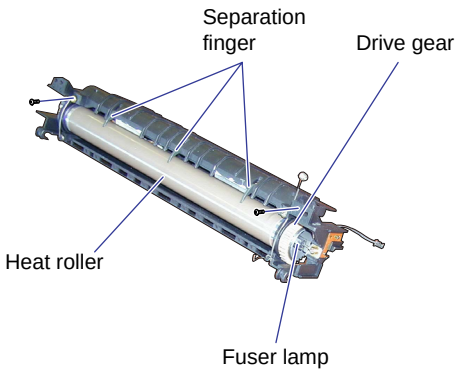
Heat roller temperature	378°F/192°C
Fuser lamp	800W
Pressure roller pressure	7kgf



2) Fusing

The heat roller and the pressure roller in the fuser unit melt toner onto the paper using a combination of heat and pressure.

- The upper heat roller has a Teflon coating on the aluminum surface, which allows toner easily to be released from the surface. The ruggedness enhancement and antistatic prevention processing are used in making the heat roller.
  This will ensure longevity and prevent toner from sticking to the heat roller.
- The heat roller uses a halogen lamp as a heat source.
- The temperature sensor (thermistor) is on the heat roller to control the heat roller temperature to the defined value.
- The fuser thermostat is installed above the heat roller to prevent the roller temperature from rising abnormally high.
- The pressure roller under the fuser unit is made of silicone rubber and covered with the fluorine plastic tube to enhance the roller ruggedness.
- The fuser separation finger touches the heat roller. It separates paper from the roller to avoid paper jam for fusing.



3) Driving the fuser unit

- The rotation of the main motor is transmitted to the heat roller gear via some gears.
- The paper exit sensor lever detects the paper exiting the fuser unit.

4) Fusing the temperature

The heat roller has a halogen lamp that lights up while warming up and making copies.

- Sequence
  a) When turning ON the power, the heat roller is heated up by the heater lamp.
  b) When the heat roller reaches a specific temperature (302°F/150°C), the main motor is turned ON and the heat roller and the pressure roller start rotating. When the heat roller reaches the proper fusing temperature (378°F/192°C), the main motor is turned OFF and the unit is ready.
  c) The thermistor detects the heat roller temperature and controls switching the fuser lamp to keep the temperature constant.

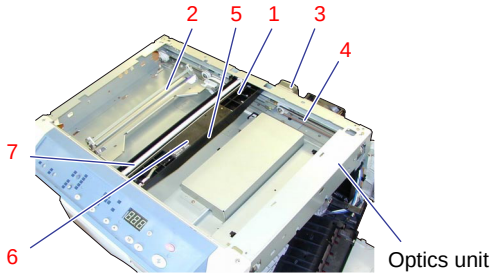
NOTE:

- E4-01 will be indicated if the heat roller temperature is not reach within the specified period of time after the power is turned ON.

5.Optics Unit

1)Construction of the optics unit

- The optics unit consists of the exposure (fluorescent) lamp, the lens, the CCD sensor and the reflecting mirrors.
- The optics motor moves the full-speed unit exposing the original with the exposure lamp. The reflection from the original is gathered on the CCD image sensor via lens, where optics signals can be converted into electrical signals. (photoelectric conversion)
  When this photoelectric conversion is performed, image information is converted into pixel signals according to image density.
- The electrical signals (analog signals) are converted into digital signals by the CCD control PCB and they are transmitted to the image processing unit in the control PCB of the main body.
- When the laser beam equivalent to the image processing is emitted, charge on the drum disappears.



	Component name	Description
1	Full-speed unit	Consist of the exposure lamp and the no.1 mirror. Scan the original.
2	Half-speed unit	Consist of the no.2 and no.3 mirrors. Guide the reflected light from the no.1 mirror. Keep the optical path length constant between the original and lens by scanning at half-speed of the full-speed unit.
3	Optics unit drive motor	Stepping motor. Drives the full-speed and half-speed unit.
4	Drive wire	Transmit driving force from the optics unit to the full-speed and half-speed unit.
5	Lens	Form image on the CCD image sensor of the reflected light from the original.
6	CCD image sensor	Convert optical signals into electrical signals.
7	Exposure lamp	Fluorescent. Light up the original.

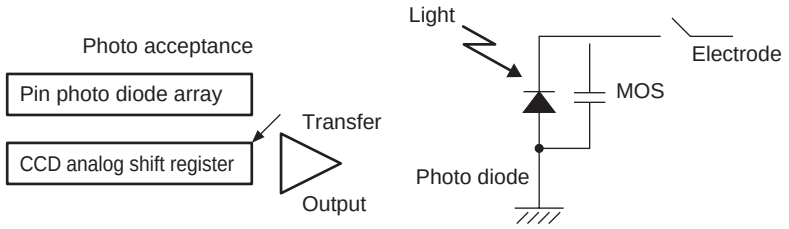
2) Photoelectric conversion

● Photoelectric conversion is to convert optical signals into electrical signals. Pixel used for photoelectric conversion is called “photoelectric converted pixel”. The linear type of CCD image sensor for B/W is used here.

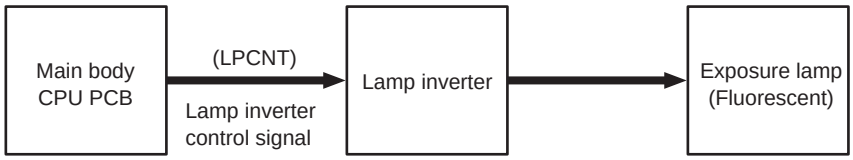
3) CCD sensor

The CCD image sensor consists of the photo acceptance unit, transfer unit and output unit. The sensor is capable of detecting approximately 5,000 pixels.
Optics signals are converted into electrical signals and transferred by the photo diode before being read out.

Signals of the even and odd pixels are read out independently to speed up the signal processing.



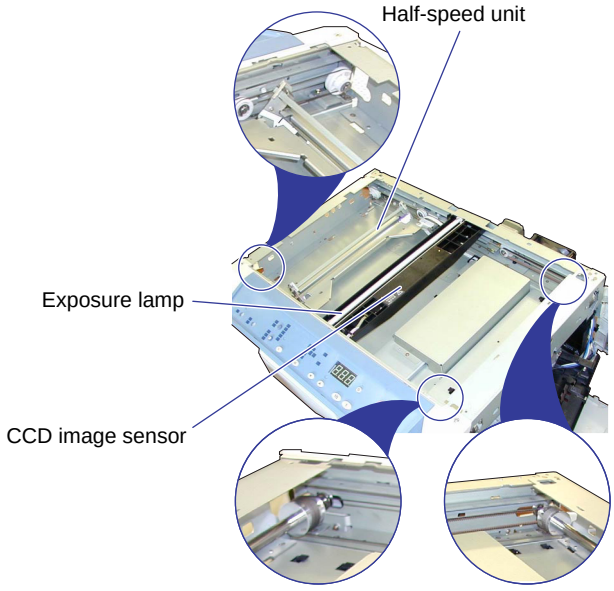
4) Controlling the exposure lamp switching



When the control signal (LPCNT0) is “L” level at the lamp inverter in the CPU PCB, the lamp inverter lights the exposure (xenon) lamp at a high-frequency rate.

5) Driving the optics unit

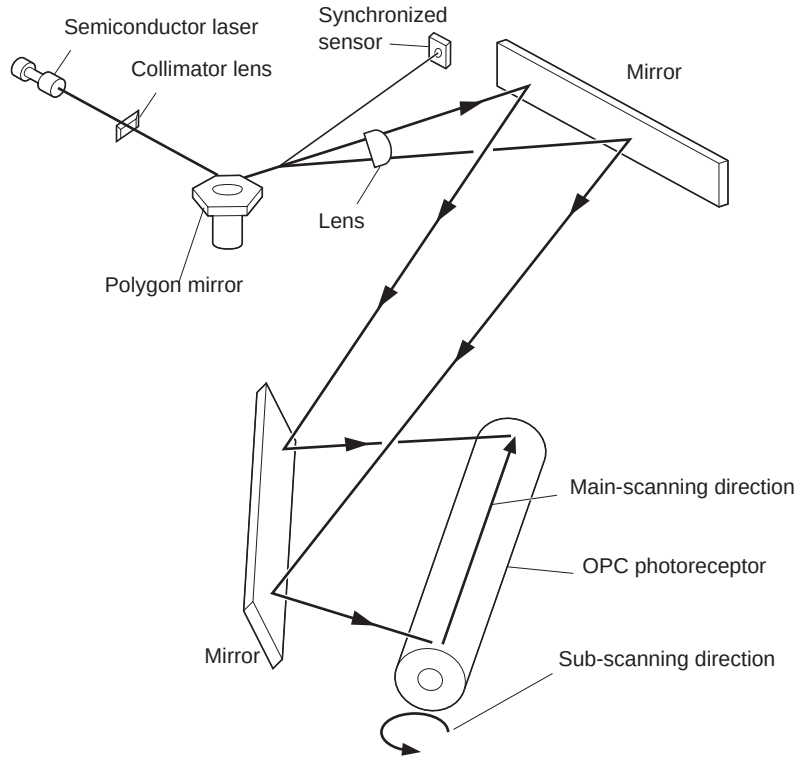
- The optics unit (full-speed and half speed unit) is driven by the optics unit motor. Its rotation is transmitted to the full-speed and half-speed unit via optics drive belt, optics drive pulley, full-speed unit drive wire and half-speed unit drive wire.
- Regarding the optics drive pulley, the diameter of the half-speed unit pulley is 1/2 of that of the full-speed unit pulley. Therefore, the half-speed unit moves at 1/2 speed of the full-speed unit and this mechanism makes it possible to keep the optical path length constant between the original and lens.
- The fixed position of the full-speed unit is determined by the full-speed unit position detecting plate and the optics unit home position sensor.
- The full-speed unit has the exposure lamp and no.1 mirror. It scans the original with the exposure lamp and guide the reflection via no.1 mirror to the no.2 and no.3 mirrors. The image is formed on the CCD image sensor via lens.



Optics drive belt
Optics drive pulley
Optics drive motor
Full-speed unit
Drive shaft
Full-speed unit drive wire
Half-speed unit drive wire
Full-speed unit pulley
Half-speed unit pulley
Full-speed unit home position sensor
No.3 mirror
No.2 mirror
No.1 mirror

6.Laser Unit

(1) General description

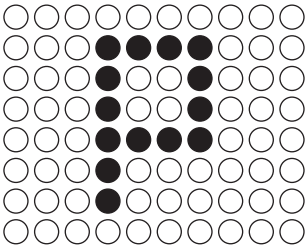


1) The image photoelectric-converted by the CCD sensor is converted into laser intensity signals by the CPU PCB and laser control PCB, and the signals are output according to the write timing signals. Afterward, the collimator lens changes the laser intensity signals to parallel beams with their sections rough-circularized.
2) The parallel laser beams are reflected by the hexagon-shaped polygon mirror which rotates at a high constant speed and reaches the drum at the size of 42.3 microns per dot via f-θ lens and two mirrors.
3) The laser beams are emitted in the main-scanning direction while the drum is rotating in the sub-scanning direction at a constant speed. The electrostatic latent image is formed on the drum according to the image information.
4) Part of the laser beams are received by the pin photo sensor (synchronized signal detecting sensor) placed near the f-θ lens to match the timing with the image data in the main-scanning direction by the laser beams on the drum.

(2) Semiconductor laser

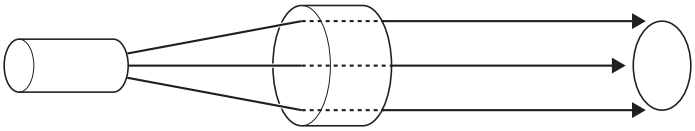
1) The laser beam is switched ON/OFF with or without the electric current on the two semiconductor lasers. This “ON/OFF” is based on the digital signals corresponding to the image data and the beam is emitted onto the drum to form the image.

(Letter “P” image data)
● — Semiconductor laser ON
○ — Semiconductor laser OFF



(3) Collimator lens

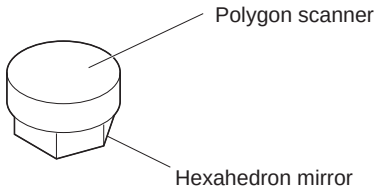
1) The emanative beam of the semiconductor laser is converted to the parallel beam here to stabilize scanning and improve the beam convergence.



Semiconductor laser　　Collimator lens

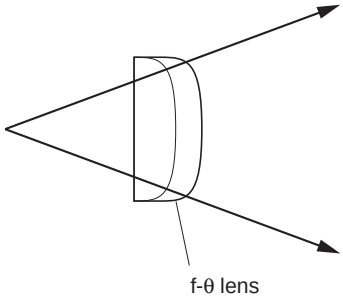
(4) Polygon scanner

1) The polygon scanner consists of the hexagon-shaped mirror that converts laser beam to scanning beam. To perform the high resolution recording, it is important to pay attention to the scanning speed irregularity from the reflection on each surface. The tilt difference of each reflection against the axis is checked at startup performance.



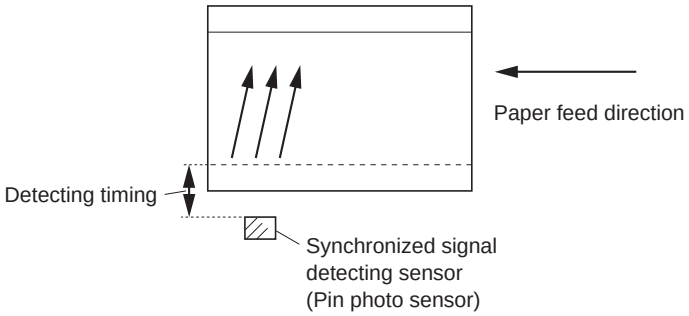
(5) f-θ lens

1) The parallel beams reflected by the polygon scanner are gathered on the drum by f-θ lens. This lens is designed to bend the transmitted beams strongly toward the optic axis around the lens whose scanning angle is large.



(6) Synchronized signal detecting sensor (Pin photo sensor)

1) Detect the laser beams passing every scanning of each face of the polygon scanner to prevent the image position slippage on the next main-scanning line to the minimum and to detect the laser beam position in the main-scanning direction on the drum accurately. The mirror sharing errors and the rotation irregularity are ensured by writing the image data according to this write timing signals.



Section III Maintenance

Machine cleaning and parts replacements are the main purpose of the periodic maintenance service. It is essential for service to perform the maintenance properly to ensure the customer's satisfaction. This service makes it possible to achieve good machine performance.

3.1 Precautions for Preventive Maintenance Service

- Make an appointment with the user beforehand for the maintenance.
- Explain the purpose of the maintenance sufficiently, which is not to repair the machine but to avoid problems.
- Prepare the necessary parts and tools beforehand.
- After the maintenance, clean the machine surroundings and dispose of the cleaning materials properly.
- Let the customer know when the maintenance is completed.
- Unplug the power before removing the covers.
- When using IPA (isopropyl alcohol), read and follow the instruction carefully. Wear rubber gloves and eye protection.

1) Timing
   - Perform the periodic maintenance service following the maintenance chart.

2) Cleaning rollers
   - Clean rollers using the cloth with water.
   - Use IPA (isopropyl alcohol) if rollers are very dirty.

3) Precautions for disassembly and adjustment

- Unplug the power before disassembling the machine.
- Do not operate the machine with the parts removed.
  Be careful not to have your clothes caught in the gears, belts and so on when you need to operate the machine without covers.
- Do not connect or disconnect any connector on the PCBs while electricity is turned ON.
- Do not use a vacuum cleaner to clean sensors. It may cause electrostatic damage.
  Use the blower brush and cotton swab instead. Remove sensors beforehand when cleaning the unit.
- For the drum, follow "1.8 Precautions of consumables"
- Make sure to use the correct screw sizes. Do not mix them up.
- Use toothed lock washer to install ground wires for electrical continuity.
- Reassemble parts in the reverse sequence of the disassembly unless otherwise noted.
- Replace blown fuses with the specified rated ones.

<< Precautions of laser beam >>

Laser beam never leaks out in operation because the optics system used in the machine is contained completely in the protection housing and the out cover. However, follow the instructions below while performing maintenance service.

1. Do not insert tools like very reflective drivers directly into the laser beam path.
2. Take off metal-made accessories like watches and rings.
   (The laser beam may be reflected and get into eyes.)

Be very careful for the laser beam is invisible.

3.2 Maintenance chart

1) Replacement

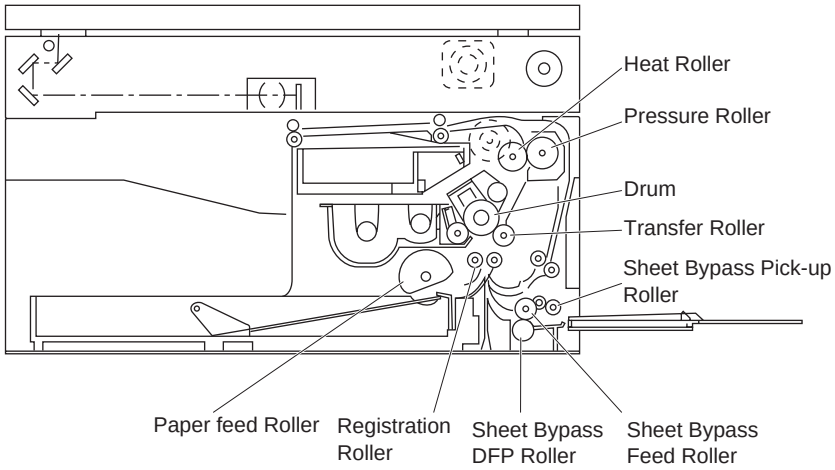
Item	Part	Part number	Maintenance		Remarks
			100k	200k	
Main unit	Ozone filter	FFPHJ0057	◎	◎	
	LSU cover glass	————	△	△	
Transfer unit	Transfer roller	FFPMA0677	◎	◎	
	Discharge needle	FFPKS1254	△	△	
Fuser unit	Heat roller	FFPMA0689	◎	◎	
	Pressure roller	FFPMA06901	◎	◎	
	Pressure roller bushing	FFPMQ0652	◎	◎	
	Heat roller bushing	FFPMQ0653	◎	◎	
	Heat roller gear	FFPMF1325	◎	◎	
	Separation finger	FFPLK0391	◎	◎	
	Thermistor	FFPBL0018	◎	◎	
Paper feed unit	Sheet bypass paper feed roller	FFPMA0684	◎	◎	
	Sheet bypass pick up roller	FFPMA0685	◎	◎	
	DFP roller	FFPMA0517	◎	◎	
	Paper feed roller	FFPXA23S00	◎	◎	
Optics unit	Platen glass Ass'y	FFPXR01S01	△	△	
	Mirror 1	FFPGC0223	△	△	
	Mirror 2	FFPGC0225	△	△	
	Mirror 3	FFPGC0225	△	△	
	Lens	FFPGC0226	△	△	
	Reflecting mirror	FFPGC0224	△	△	

△ : Replacement part due to the durability

◎ : Regular replacement part

3.3 Cleaning Method

Proceed to next page.



		Cleaning position	Tool/solvent	Description/precaution
Paper feed unit	1	Sheet bypass pick up roller	Dampened cloth/IPA	•Use of IPA (isopropyl alcohol) must be minimized. •Avoid using cotton.
	2	Sheet bypass paper feed roller		
	3	Registration roller		
	4	Transport roller		
	5	Paper feed roller (Tray)		
Developer unit	6	Corona wire	Dampened cloth	•High voltage leak may occur unless it is replaced at the defined cycle. •Avoid slacks and kinks. •Avoid using cotton.
	7	Corona grid		
		Corona case		
	8	Lower developer frame	Brush / vacuum Dampened cloth	•Tilt the developer unit by 45˚ with the magnet roller side up and rotate the roller counterclockwise several times. •When the toner on the lower frame sticks to the roller, remove it with a brush or vacuum.
Fuser unit	9	Fuser infeed guide	Cloth	
	10	Fuser thermistor	Cloth	
	11	Fuser separation finger	Cloth	•Remove toner. •Be careful not to damage the finger.
	12	Heat roller Pressure roller	Cloth	•Use IPA if the roller is very dirty. •Be careful when the roller is hot.
Optics unit	13	Mirror (No. 1 to 3)	Blower brush/ Glass cleaning paper with IPA	•Remove dust with a blower and clean softly with glass cleaning paper and IPA. •Do not hurt the surface of the mirror. •Be careful not to move the mirror. •Water or neutral detergent may leave some marks on the mirror. •Do not use cotton wastes. •Turn the power OFF after the cleaning and turn it ON again to let the machine perform the "Light intensity adjustment".
	14	Lens	Blower brush/ Glass cleaning paper with IPA	•Remove dust with a blower and clean softly with glass cleaning paper and IPA. •Do not hurt the surface of the mirror.

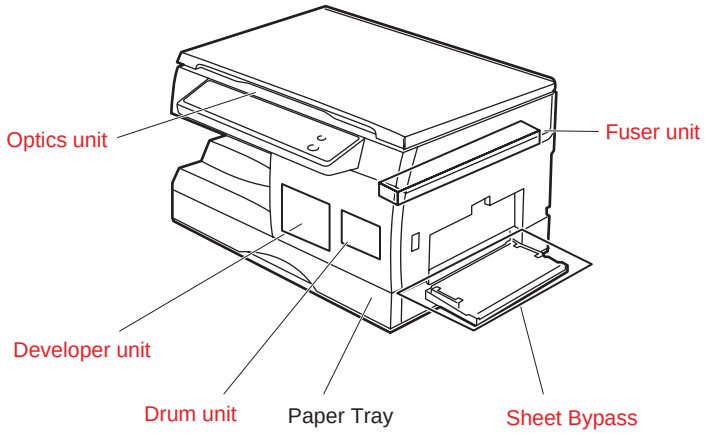
(to be continued)

		Cleaning position	Tool/solvent	Description/precaution
Main body	15	Toner level sensor	Cloth	
	16	Platen glass	IPA	
	17	Platen mat	Cloth	
	18	Ozone filter		• In a dusty place, clogging and jamming may occur before the machine reaches the defined replacement term.
	19	Outer cover		• Clean with dampened cloth. • Use detergent if it is very dirty.

3.4 Disassembly and Re-assembly

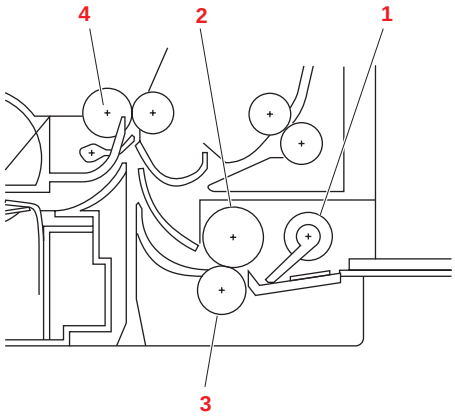
PM parts replacement procedure

- The replacement procedure is shown below.



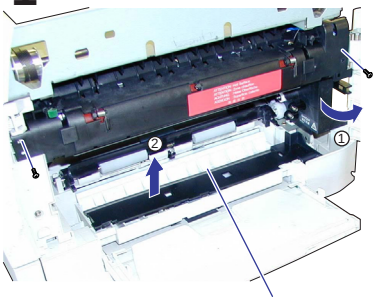
1. Sheet bypass

Item		Part name
Paper feed unit	1	Sheet bypass pick-up roller
	2	Sheet bypass paper feed roller
	3	Sheet bypass DFP roller
	4	Registration roller



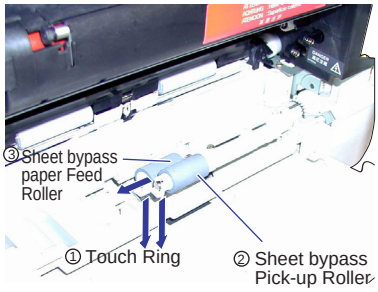
1) Replacement of the sheet bypass pick-up roller/sheet bypass paper feed roller

1



① Open the right cover.
② Remove the sheet bypass paper feed unit cover with the screw driver.

2

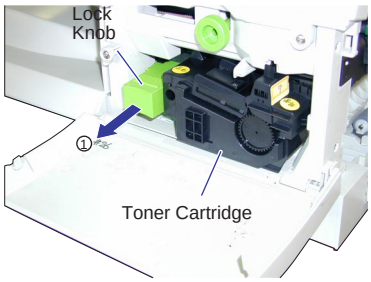


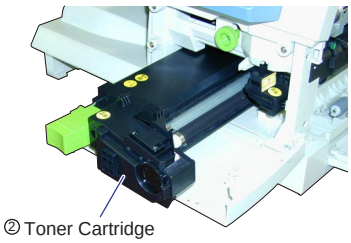
① Remove the touch ring.
② Remove the sheet bypass pick-up roller
③ Remove the sheet bypass paper feed roller.

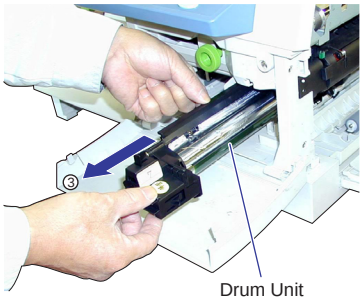
NOTE: Do not install the sheet bypass pick-up roller in reverse.

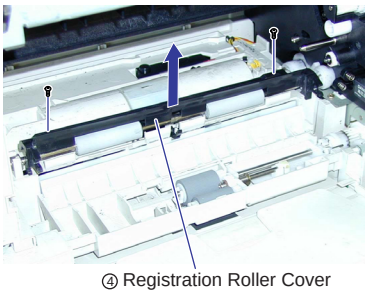
2) Replacement of the registration roller/registration roller bushing

3

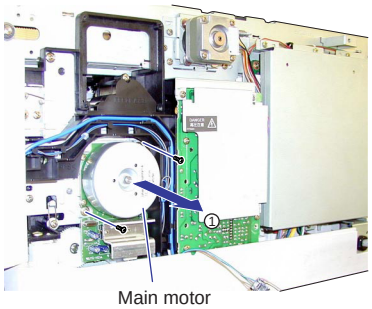
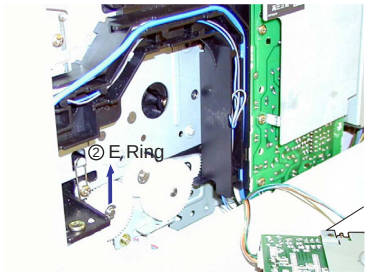
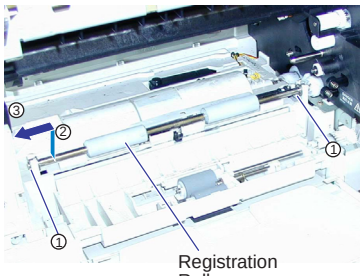




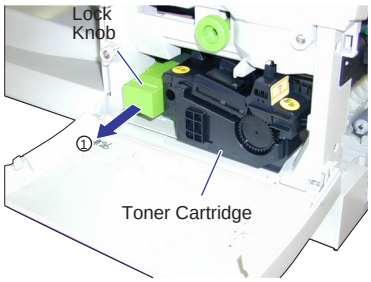
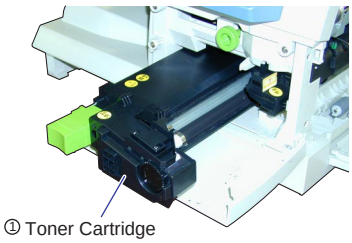
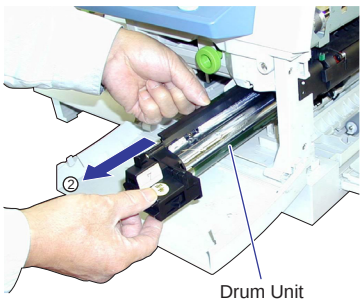
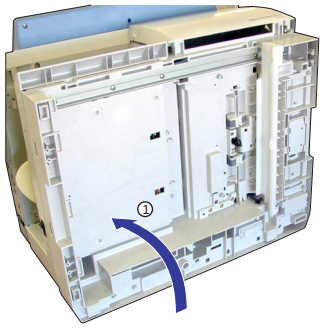


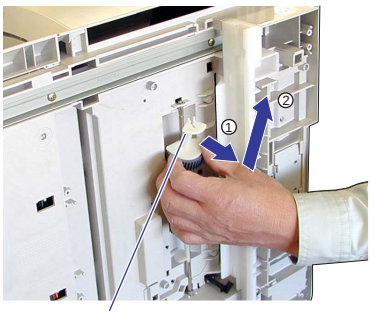


① Open the right cover.
② Take out the toner cartridge.
③ Take out the drum unit.
④ Remove the registration roller cover.

4  Main motor  	① Remove the Main motor. ② Remove E rings.
5  Registration Roller	① Remove the E rings. (front/rear) ② Move the bushing upside. ③ Remove the registration roller.

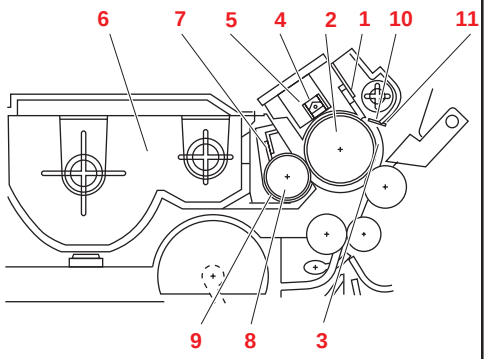
3) Replacement of the paper feed roller

6   	① Remove the toner cartridge. ② Remove the drum unit.
7 	① Tilt the unit. **NOTE:** Remove platen cover first.

8  Paper feed Roller	Replace the paper feed roller.

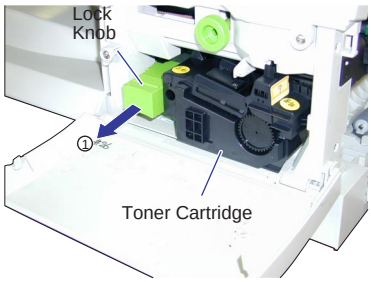
2. Developer unit/Drum unit

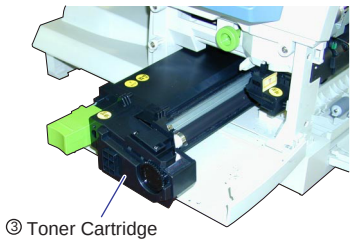
Item		Part name
Developer unit	1	Cleaning blade
	2	Drum
	3	Blade side seal (F)
	3	Blade side seal (R)
	4	Corona
	5	Corona wire
	6	Toner cartridge
	7	Developer blade
	8	Magnet roller
	9	Magnet roller support (R)
	10	Toner receiving sheet
	11	Toner receiver support mylar

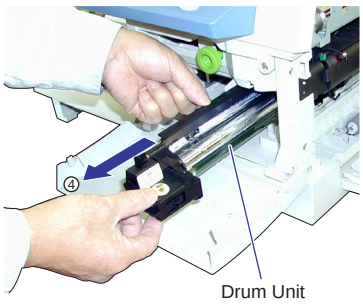


1) Replacement of the drum/cleaning blade/blade side seal

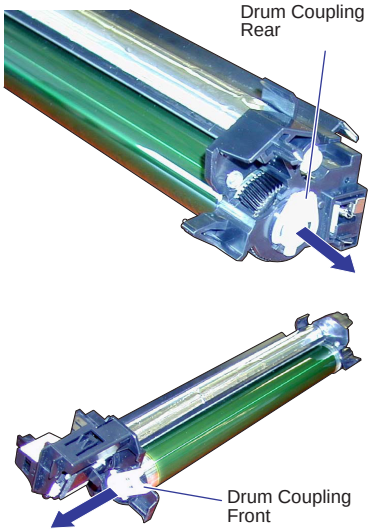
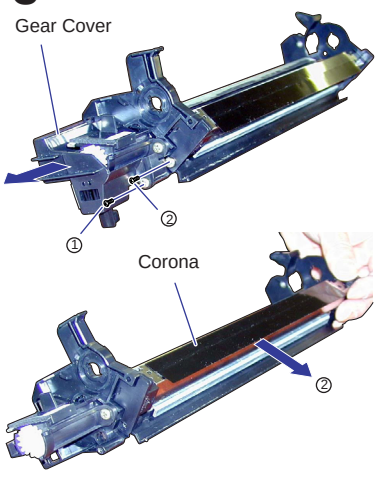
1

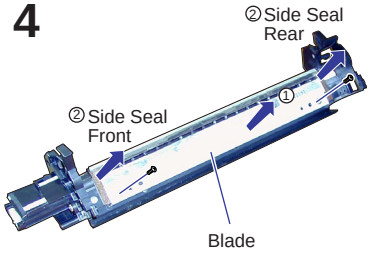




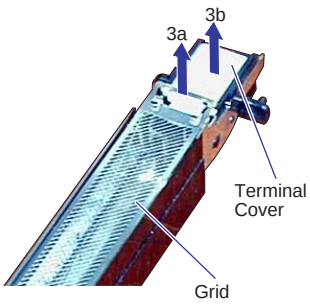
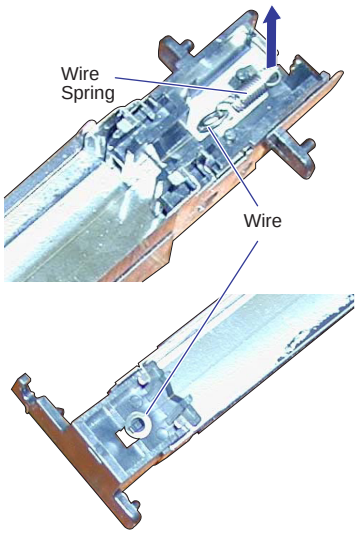


① Open the front cover.
② Open the right cover.
③ Take out the toner cartridge.
④ Take out the drum unit.

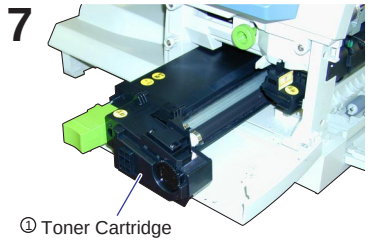
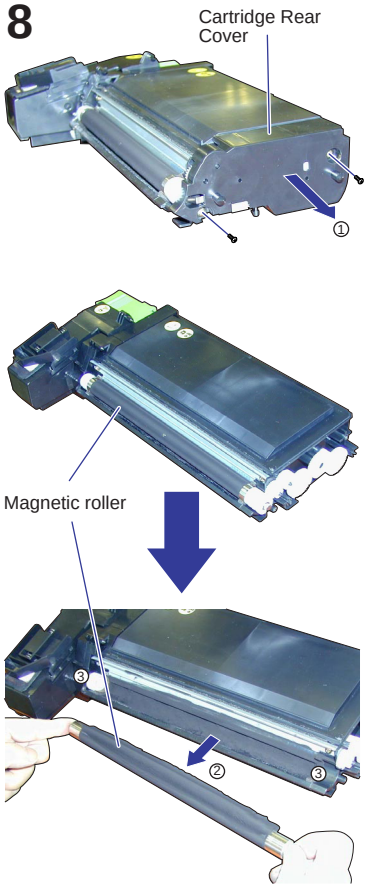
2 	① Remove the drum coupling F and R. (Turn them until they click.) ② Remove the drum.
3 	① Remove the blade fixing screw. ② Remove the corona. (1 screw)

4 	① Remove the blade. ② Remove the side seals.

2) Replacement of the corona wire.

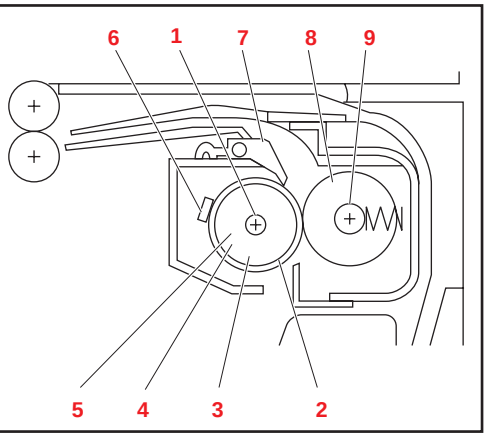
5 	① Perform the procedure 1. ② Remove the corona fixing screw. ③ Pull out the corona. ④ Remove the corona grid (3a)and terminal cover (3b).
6 	① Replace the wire.

3) Replacement of the side seal.

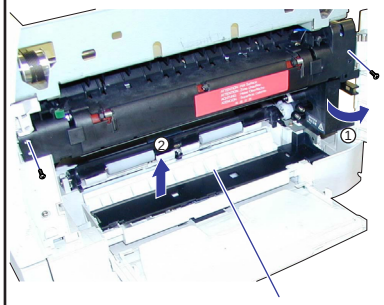
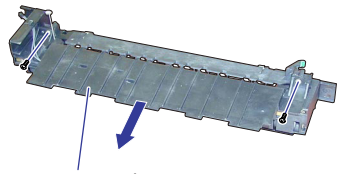
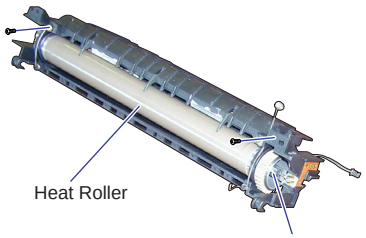
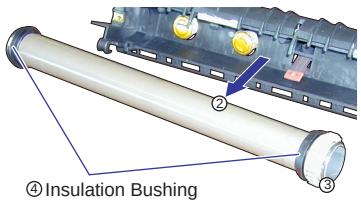
7  	① Take out the developer cartridge.
8  	① Remove the cartridge rear cover. ② Remove the magnet roller. ③ Replace the side seal.

3. Fuser unit

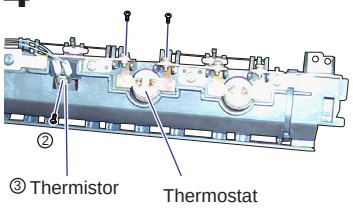
Item		Part name
Fuser unit	1	Fuser lamp
	2	Heat roller
	3	Heat roller shaft
	4	Bushing
	5	Heat roller gear
	6	Thermistor
	7	Separation finger
	8	Pressure roller
	9	Pressure roller shaft



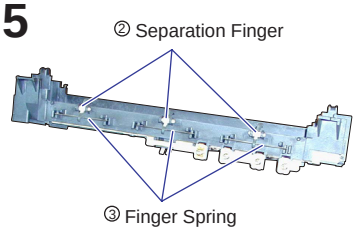
1) Replacement of the fuser lamp/heat roller/bushing/heat roller gear

1  Paper Feed Unit Cover	① Turn OFF/unplug the power. ② Open the front cover. ③ Open the right cover. ④ Remove the rear cover. (3 screws) ⑤ Remove the lamp/thermistor relay connectors. ⑥ Remove the screws on the fuser unit. (2 screws)
2  Pressure unit	① Remove the pressure unit. (2 screws)
3  Heat Roller Fuser Lamp   ④Insulation Bushing	① Remove the fuser lamp. (Installing direction: "voltage" indicating side to the gear side) ② Remove the heat roller. ③ Remove the heat roller gear. ④ Replace the insulation bushing.

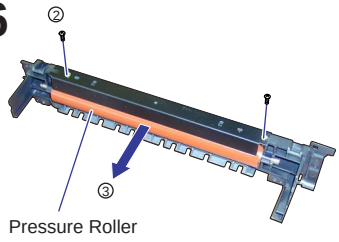
2) Replacement of the thermistor.

4  	① Perform procedure 2. ② Remove the screws. ③ Replace the thermistor.

3) Replacement of the separation finger.

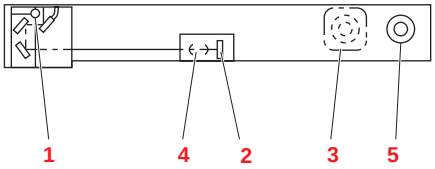
5  	① Perform procedure 2. ② Remove the separation finger springs. ③ Replace the three fingers.

4) Replacement of the pressure roller/pressure roller bushing.

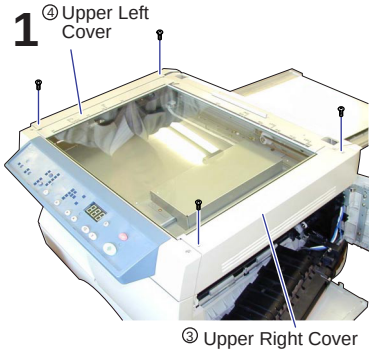
6  	① Perform procedure 2. ② Remove the pressure roller. ③ Replace the pressure roller bushing.

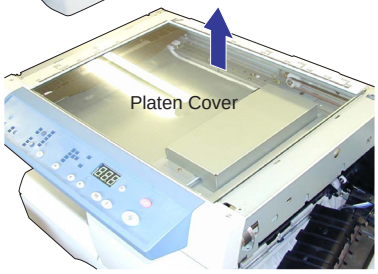
4. Optics unit

Item		Part name
Optics unit	1	Exposure lamp
	2	CCD
	3	Motor
	4	Lens
	5	Optics drive pully



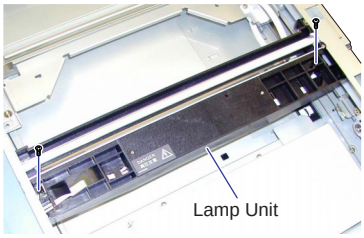
1) Replacement of exposure lamp/LSU

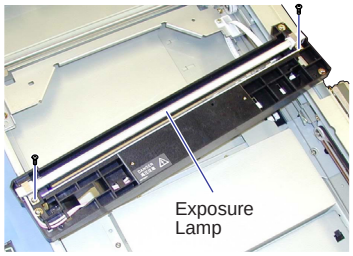




① Enter the Service mode.
② Perform “F8-C00”.
③ Remove the upper right cover.
④ Remove the platen cover.

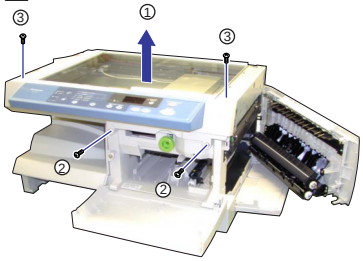
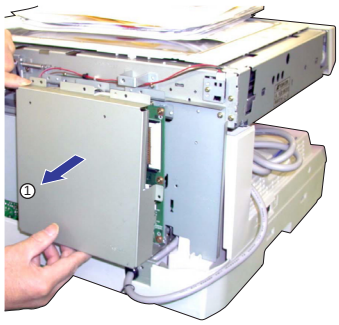
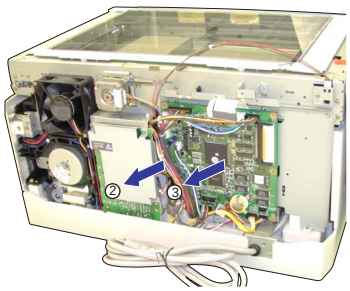
2

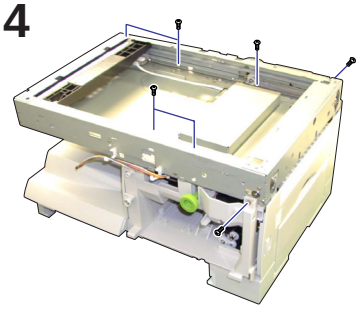
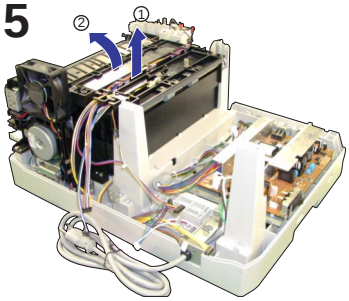
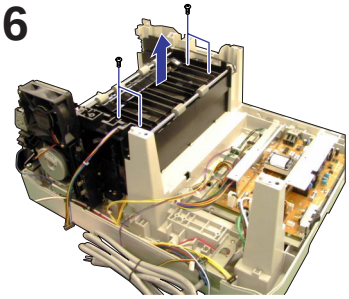




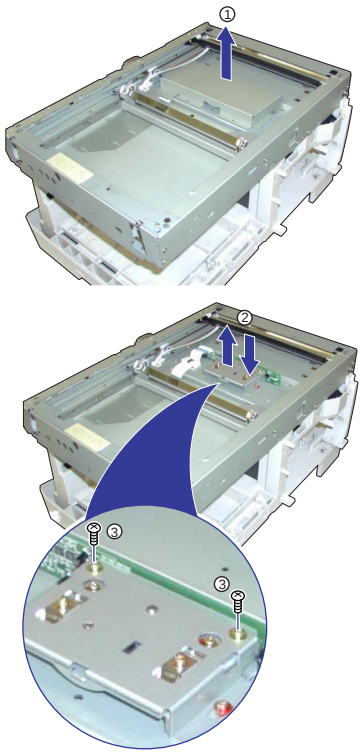
① Remove the full-speed unit.
② Replace the exposure lamp.
③ When assembling the unit:
Place the half-speed unit in the middle and the full-speed unit on the right, and then fix the optics wire.

2) Replace the LSU (Laser Scaner Unit)

1	① Enter the service mode, and perform F8-C00. ② Remove the right upper cover. ③ Remove the left and right cover. ④ Remove the rear cover.
2 	① Remove the platen cover. ② Remove 2 screws. ③ Remove the control panel. (2 screws, 1 connector)
3  	① Remove the CPU shield plate. ② Remove all cables from CPU PCB. ③ Remove the CPU PCB.

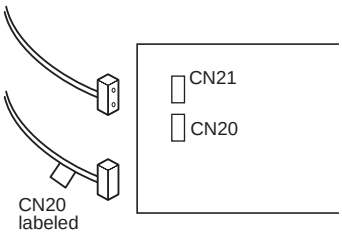
4 	Remove the optics unit assembly. (7 screws)
5  	① Remove the cable from the paper exit guide assembly. ② Remove the paper exit guide assembly.
6 	Remove the LSU assembly. (4 screws)

3) Replace the CCD PCB



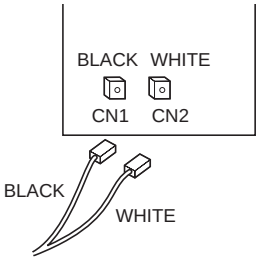
① Remove the lens unit cover.
② Replace the CCD PCB.
③ Adjust the copier image with adjusting screws.

4) Replacement of the CPU PCB



When replacing the CPU PCB, pay attention to the connections of CN20 and CN21.
Connect the lead wire connector labeled CN20 to CN20.
Connect the lead wire connector without a label to CN21.

5) Replacement of the LVPS



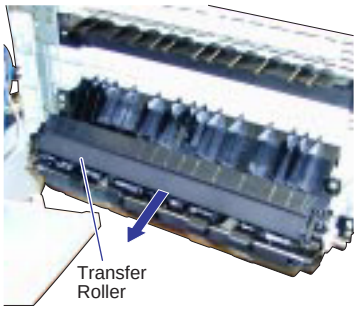
When connecting the power cord to the PCB, connect the black-colored lead wire to CN1 and connect the white-colored lead wire to CN2.

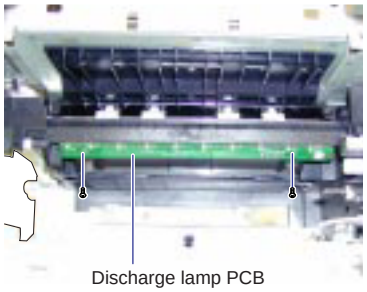
5. Main body

Item	Part name	
Main body	1 Ozone filter 1	
	2 Transfer roller	
	3 Discharge lamp	

1) Replacement of the transfer roller and Discharge lamp

1



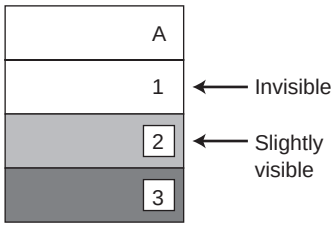


① Open the right cover.
② Remove the transfer roller releasing its fingers.
③ Remove the developer unit.
④ Remove the drum.
⑤ Replace the discharge lamp.

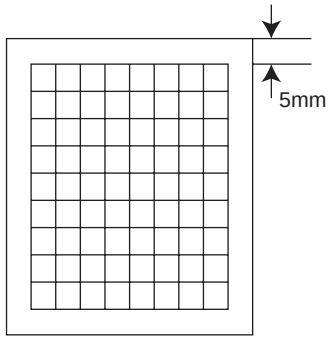
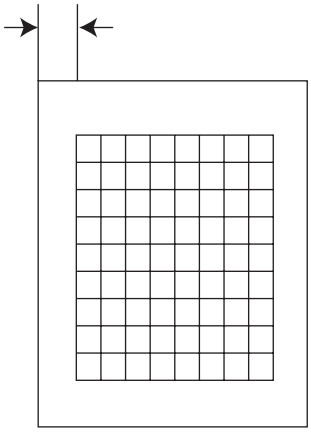
Follow the table below when service is performed in any of the areas listed.

No	Operations	Adjustment / Component name	Optics unit cleaning	Toner level sensor cleaning	Power Switch OFF/ON	Image quality check	Image density adjustment F6-C50, F6-C51	Remarks
.	Installation	Main body			1st	2nd	3rd	
1	Cleaning	Optics unit	1st		2nd	3rd	4th	
2		Corona			1st	2nd	3rd	
3		Toner level			2nd	3rd	4th	
4	Replacement	sensor		1st	1st	2nd	3rd	
5		Drum	1st		2nd	3rd	4th	
6		Exposure lamp				2nd	3rd	
7		Toner level		1st		2nd	3rd	
8		sensor			1st	2nd	3rd	
9		Developer unit			1st	2nd	3rd	
10		Corona wire				1st	2nd	
11		Platen glass			1st	2nd	3rd	Input F5/6 data.

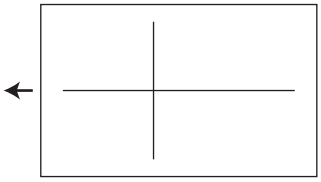
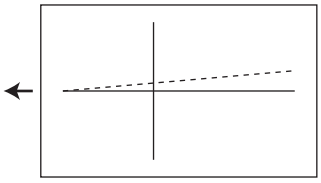
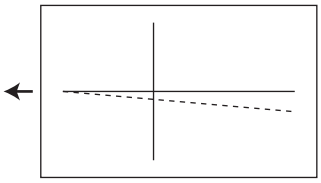
1. Exposure adjustment

Figure	Procedure
Text/Photo mode  	Image density adjustment ① Make sure that "F6-C17, C19" is "0". ② Confirm the image with the F2 mode. (The exposure is at the center in the manual mode and the text/photo mode.) ③ When copying the gray scale (P/N FQ-SJ101), 1 must be invisible. 2 must be slightly visible. ④ Move to "F6-C50" mode. ⑤ Enter the adjustment value. Press Exposure key for "–" value. ⑥ Press Start key. ⑦ Perform the procedure① to ③ and make sure the image density is adjusted correctly. (When re-adjustment is required, Perform the procedure ④ to ⑥.) ⑧ Use the following code for other image quality mode adjustments. ⑨ For Photo mode The gray scale A must be invisible. 1 must be slightly visible. F6-C51 : Photo mode **Note:** Confirm image quality meets customers requirements.

2. Skew/Side position adjustment (Print unit)

<table>
<tr><th>Position</th><th>Adjustment</th></tr>
<tr><td> 
</td><td>Skew adjustment
When the skew copy is not fixed by the tray adjustment, follow the instruction below.
① Load LETTER/A4 paper in the sheet bypass.
② Enter F8 in the service mode.
③ Select the "F8-C50" mode and press Start key.
④ Make sure if the skew occurs.
⑤ Check each paper tray.
⑥ If you find the skew at the other trays, select "F6-C41 to C42" corresponding to the tray and adjust the loop length at the registration.</td></tr>
<tr><td> 
<table><tr><th>Set value</th><th>Adjustment</th></tr><tr><td>-4</td><td>Move left by 2.0 mm.</td></tr><tr><td>-3</td><td>Move left by 1.5 mm.</td></tr><tr><td>-2</td><td>Move left by 1.0 mm.</td></tr><tr><td>-1</td><td>Move left by 0.5 mm.</td></tr><tr><td>0</td><td>0.0 mm</td></tr><tr><td>1</td><td>Move right by 0.5 mm.</td></tr><tr><td>2</td><td>Move right by 1.0 mm.</td></tr><tr><td>3</td><td>Move right by 1.5 mm.</td></tr></table></td><td>Side position adjustment
(Electric adjustment)
Attention: Follow the instruction below ONLY WHEN the side position is not adjusted correctly by the auto adjustment.
① Perform the procedure ① to ③ above.
② Measure the interval between the left end of the paper and the black line at the left end.
③ Adjust the value of "F6-C84" following the procedure below.
④ The interval is less than 5 mm : enter the positive value (+) according to the table below.
⑤ The interval is more than 5 mm : enter the negative value (–) according to the table below.</td></tr>
</table>

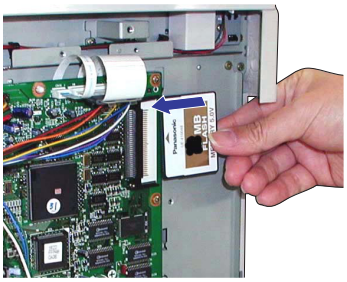
3. Skew/Lead edge position adjustment (Scanner unit)

Position	Adjustment
 (Original)  Figre 1 (Copy)  Figre 2 (Copy)	**Attention:** The CCD unit should be adjusted ONLY WHEN the printer fails to adjust it. Image skew adjustment ① Before loosening the CCD fixing screw (front), put a mark on the position where the CCD is installed. ② Loosen only the CCD fixing screw (front). ③ When the image skew is shown left (Figure 1), turn the screw (front) clockwise. ④ When the image skew is shown left (Figure 2), turn the screw (front) counterclockwise.

4. Void Registration adjustment

Position	Procedure
	① Make copies with Test chart 53. ② Adjust the lead edge with "F6-C07". (+) : Increase the void. (–) : Decrease the void. ③ Adjust the rear end void with "F6-08". (+) : Increase the void. (–) : Decrease the void.

3.6 Updating the Firmware



① Check the current firmware version with service mode (F9-C01).
② Turn the power switch OFF.
③ Remove the rear cover.
④ Insert the Flash ROM Card into the copier card slot.(Panasonic logo side should be forwarded)
⑤ Turn the power switch ON.
⑥ Remove the Flash ROM card after copier warming up is completed.
⑦ Check the updated firmware version with service mode (F9-C01).
⑧ Re-install the rear cover.

Section IV PCB Connector and Signal Imformation

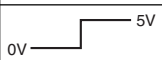
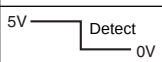
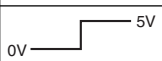
4. 1 Glossary of Electrica Abbreviations

Signal Name	Function
AC1	AC 120V / AC 220 - 240V power supply
AC2	AC 120V / AC 220 - 240V power supply
AGND	Ground
BREF	Bias adjustment signal
ELP	Discharge lamp ON/OFF signal
ENABLE	Laser current cintrol signal
EPCNT	Poser supply control signal
EXFL	Exhaust fan motor lock detecting signal
EXFM	Exhaust fan motor ON/OFF signal
GND	Ground
GREF	Grid bias adjustment signal
HFPS1	Bypass paper size detecting signal 1
HFPS2	Bypass paper size detecting signal 2
HFSOL	Bypass paper feed solenoid drive signal
HPSN	Lamp unit home position detecting signal
HTTR	Fuser Lamp ON/OFF signal
HVBCNT	Bias ON/OFF signal
HVCNT	Charge high voltage ON/OFF signal
HVLKC	Charge high voltage leak detecting signal
HVTCNT	Transfer high voltage ON/OFF signal
LMA	Optics motor drive signal A
LMAB	Optics motor drive signal $\overline{A}$
LMB	Optics motor drive signal B
LMBB	Optics motor drive signal $\overline{B}$
LP1	AC 120V / AC 220 - 240V power supply
LPCNT	Exposure lamp inverter ON/OFF signal
MMCNT	Main motor drive control signal
MMLCK	Main motor lock detecting signal
NDSN	Drum virgin detecting signal
PESN	Paper detecting signal

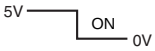
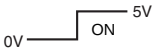
Signal Name	Function
PFOSN	Paper exit sensor paper detecting signal
PGND	Ground
PMCLK	Polygon motor lock detecting signal
PMCNT	Polygon motor drive control signal
PMLCK	Polygon motor drive clock signal
PUSOL	Bypass pick-up solenoid drive signal
PVCNT	DC+24V ON/OFF signal
PVP	DC+24V power supply
RRSN	Registration roller paper pass sensor detecting signal
RRSOL	Bypass registration solenoid drive signal
SVCNT	Scanner DC+24V ON/OFF signal
SVP	DC+24V power supply
TESN	Toner level detecting signal
TH1	Fuser temperature detecting signal
TH2	Fuser temperature detecting signal
TREF	Transfer voltage adjustment signal
VL	DC+5V power supply
ZCRS	Zero cross signal

4. 2 Main CPU PUB

(CN1)

Pin No.	Signal Name	Destination	Status	Function
1	GND	—	—	—
2	—	—	—	—
3	VL	—	—	Ground
4	GND	Paper exit sensor CN-3	0V	Ground
5	PFOSN	Paper exit sensor CN-2		Paper detecting signal
6	VL	Paper exit sensor CN-1		DC+5V power supply
7	GND	Registration sensor CN-3	0V	Ground
8	RRSN	Registration sensor CN-2		Paper detecting signal
9	VL	Registration sensor CN-1		DC+5V power supply
10	GND	Paper detecting sensor CN-3	0V	Ground
11	PESN	Paper detecting sensor CN-2		Paper detecting signal
12	VL	Paper detecting sensor CN-1		DC+5V power supply

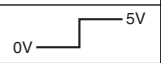
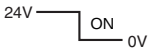
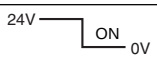
(CN2)

Pin No.	Signal Name	Destination	Status	Function
1	CPDAT	Control panel PCB CN401-1	Pules 	LED data signal
2	CPKEY	Control panel PCB CN401-2	Pules 	Key data signal
3	LCLK	Control panel PCB CN401-3	Pules 	LED data shift clock
4	CPLD	Control panel PCB CN401-4	Pules 	Key load/shift clock
5	CPLAT	Control panel PCB CN401-5	Pules 	Key data latch clock
6	—	Control panel PCB CN401-6	—	—
7	—	Control panel PCB CN401-7	—	—
8	KCLK	Control panel PCB CN401-8	Pules 	Key data shift clock
9	GND	Control panel PCB CN401-9	0V	Ground
10	VL	Control panel PCB CN401-10		DC+5V power supply
11	—	Control panel PCB CN401-11	—	—
12	—	Control panel PCB CN401-12	—	—
13	EPKEY	Control panel PCB CN401-13		Energy saver key signal
14	EPLED	Control panel PCB CN401-14		Energy saver LED signal

(CN3)

Pin No.	Signal Name	Destination	Status	Function
1	PGND	Exhaust fan motor CN-3	0V	Ground
2	EXFL	Exhaust fan motor CN-2		Motor lock detecting signal
3	EXFM	Exhaust fan motor CN-1		Motor ON/OFF signal
4	RRSOL	Registration solenoid CN-2		Solenoid drive signal
5	PVP	Registration solenoid CN-1		DC+24V power supply
6	PUSOL	Pick-up solenoid CN-2		Solenoid drive signal
7	PVP	Pick-up solenoid CN-1		DC+24V power supply
8	HFSOL	Paper feed solenoid CN-2		Solenoid drive signal
9	PVP	Paper feed solenoid CN-1		DC+24V power supply
10	—	—	—	—

(CN4)

Pin No.	Signal Name	Destination	Status	Function
1	VL_LSU	LSU CNLSN-8		DC+5V power supply
2	GND	LSU CNLSN-7	0V	Ground
3	GND	LSU CNLSN-6	0V	Ground
4	HSYNC	LSU CNLSN-5		Horizon synchronism signal
5	ENABLE	LSU CNLSN-4		Laser current control signal
6	VIDEO	LSU CNLSN-3		Video signal
7	ADJUST	LSU CNLSN-2		Laser A APC control signal
8	GND	LSU CNLSN-1	0V	Ground
9	—	—	—	—
10	PVP	LSU CNLSM-5		DC+24V power supply
11	PGND	LSU CNLSM-4	0V	Ground
12	PMCNT	LSU CNLSM-3		Polygon motor drive control signal
13	PMLCK	LSU CNLSM-2		Polygon motor drive clock signal
14	PMCLK	LSU CNLSM-1		Polygon motor lock detecting signal
15	—	—	—	—
16	—	—	—	—

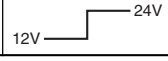
(CN5)

Pin No.	Signal Name	Destination	Status	Function
1	GND	Lamp unit home position sensor CN-3	0V	Ground
2	HPSN	Lamp unit home position sensor CN-2		Lamp unit home position detecting signal
3	VL	Lamp unit home position sensor CN-1		DC+5V power supply
4	—	—	—	—
5	—	—	—	—
6	—	—	—	—
7	—	—	—	—

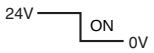
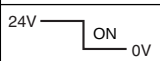
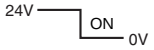
(CN6)

Pin No.	Signal Name	Destination	Status	Function
1	LMBB	Optics drive motor CN-11		Optics motor drive signal B
2	SVP	Optics drive motor CN-9		DC+24V power supply
3	LMB	Optics drive motor CN-7		Optics motor drive signal B
4	LMAB	Optics drive motor CN-5		Optics motor drive signal A
5	SVP	Optics drive motor CN-3		DC+24V power supply
6	LMAB	Optics drive motor CN-1		Optics motor drive signal A

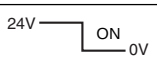
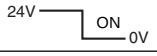
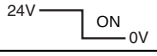
(CN7)

Pin No.	Signal Name	Destination	Status	Function
1	MMLCK	Main motor CN-5		Main motor lock detecting signal
2	MMCNT	Main motor CN-4		Main motor drive control signal
3	—	—	—	—
4	GND	Main motor CN-2	0V	Ground
5	PVP	Main motor CN-1		DC+24V power supply

(CN8)

Pin No.	Signal Name	Destination	Status	Function
1	TREF	HVPS CN701-10	Analog 0 to 6V	Transfer voltage adjustment signal
2	HVTCNT	HVPS CN701-9		Transfer high voltage ON/ OFF signal
3	GREF	HVPS CN701-8	Analog 0 to 6V	Grid bias adjustment signal
4	BREF	HVPS CN701-7	Analog 0 to 6V	Bias adjustment signal
5	HVCNT	HVPS CN701-6		Charge high voltage ON/ OFF signal
6	HVLKC	HVPS CN701-5		Charge high voltage leak detecting signal
7	VREF	HVPS CN701-4	Analog 0 to 6V	V reference signal
8	HVBCNT	HVPS CN701-3		Bias ON/OFF signal
9	PGND	HVPS CN701-2	0V	Ground
10	PVP	HVPS CN701-1		DC+24V power supply
11	—	—	—	—

(CN9)

Pin No.	Signal Name	Destination	Status	Function
1	PVCNT	LVPS CN7-5		DC+24V ON/OFF signal
2	SVCNT	LVPS CN7-4		Scanner DC+24V ON/OFF signal
3	ZCRS	LVPS CN7-3		Zero cross signal
4	HTTR	LVPS CN7-2		Fuser Lamp ON/OFF signal
5	EPCNT	LVPS CN7-1		Charge high voltage ON/ OFF signal

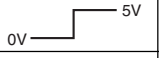
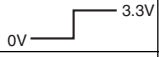
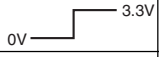
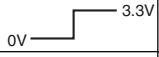
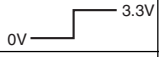
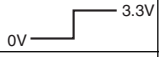
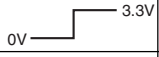
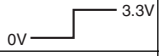
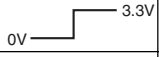
(CN10)

Pin No.	Signal Name	Destination	Status	Function
1	GND	Toner level sensor CN-1	0V	Ground
2	TESN	Toner level sensor CN-2	5V ON 0V	Toner level detecting signal
3	VL	Toner level sensor CN-3	0V 5V	DC+5V power supply
4	PVP	HVPS CN701-7	0V 24V	DC+24V power supply
5	ELP	HVPS CN701-6	24V ON 0V	Discharge lamp ON/OFF signal
6	TH1	HVPS CN701-5	Analog 2.7 to 5V	Fuser temperature detecting signal
7	TH2	HVPS CN701-4	0V	Fuser temperature detecting signal
8	VL	HVPS CN701-3	0V 5V	DC+5V power supply
9	NDSN	HVPS CN701-2	5V ON 0V	Drum virgin detecting signal
10	GND	HVPS CN701-1	0V	Ground

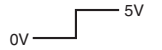
(CN11)

(Not used)

(CN12)

Pin No.	Signal Name	Destination	Status	Function
1	-12V	CCD PCB CN801-20		DC-12V power supply
2	AGND	CCD PCB CN801-19	ON	Ground
3	+12V	CCD PCB CN801-18		DC+12V power supply
4	GND	CCD PCB CN801-17	ON	Ground
5	VL	CCD PCB CN801-16		DC+5V power supply
6	GND	CCD PCB CN801-15	0V	Ground
7	RS2	CCD PCB CN801-14		Rest clock 2
8	RS1	CCD PCB CN801-13		Rest clock 1
9	SCK	CCD PCB CN801-12		Second shift clock
10	FCK	CCD PCB CN801-11		First shift clock
11	SH	CCD PCB CN801-10		Shift gate
12	GND	CCD PCB CN801-9	0V	Ground
13	CCDALD	CCD PCB CN801-8		D/A load pules
14	CCDACLK	CCD PCB CN801-7		D/A clock
15	CCDADT	CCD PCB CN801-6		D/A data
16	AGND	CCD PCB CN801-5	0V	Ground
17	VOUTO	CCD PCB CN801-4		Video out ODD
18	AGND	CCD PCB CN801-3	0V	Ground
19	VOUTE	CCD PCB CN801-2		Video out EVEN
20	AGND	CCD PCB CN801-1	0V	Ground

(CN13)

Pin No.	Signal Name	Destination	Status	Function
1	GND	LVPS PCB CN6-15	0V	Ground
2	VLC	LVPS PCB CN6-14		DC+5V power supply
3	-12V	LVPS PCB CN6-13		DC-12V power supply
4	GND	LVPS PCB CN6-12	0V	Ground
5	+12V	LVPS PCB CN6-11		DC+5V power supply
6	GND	LVPS PCB CN6-10	0V	Ground
7	GND	LVPS PCB CN6-9	1V	Ground
8	3.3V	LVPS PCB CN6-8		DC+3.3V power supply
9	3.3V	LVPS PCB CN6-7		DC+3.3V power supply
10	GND	LVPS PCB CN6-6	0V	Ground
11	GND	LVPS PCB CN6-5	0V	Ground
12	VL	LVPS PCB CN6-4		DC+5V power supply
13	VL	LVPS PCB CN6-3		DC+5V power supply
14	—	LVPS PCB CN6-2	—	—
15	VL_LSU	LVPS PCB CN6-1		DC+5V power supply

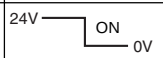
(CN14)

Pin No.	Signal Name	Destination	Status	Function
1	PVP	LVPS PCB CN5-1		DC+24V power supply
2	SVP	LVPS PCB CN5-2		DC+24V power supply
3	PGND	LVPS PCB CN5-3	0V	Ground
4	PGND	LVPS PCB CN5-4	0V	Ground

(CN15)

(Not used)

(CN16)

Pin No.	Signal Name	Destination	Status	Function
1	PGND	Inverter PCB CN1-4	0V	Ground
2	PGND	Inverter PCB CN1-3	0V	Ground
3	LPCNT	Inverter PCB CN1-2		Exposure lamp inverter ON/ OFF signal
4	SVP	Inverter PCB CN1-1		DC+24V power supply

(CN17)

Pin No.	Signal Name	Destination	Status	Function
1	HFPS1	Bypass paper size detecting switch 1		Bypass paper size detecting signal 1
2	GND	Bypass paper size detecting switch 1	0V	Ground
3	HFPS2	Bypass paper size detecting switch 2		Bypass paper size detecting signal 2
4	GND	Bypass paper size detecting switch 2	0V	Ground

4. 3 LVPS PCB

(CN1)

Pin No.	Signal Name	Destination	Status	Function
	AC1	Power cord (Black)		AC 120V / AC 220 - 240V power supply

(CN2)

Pin No.	Signal Name	Destination	Status	Function
	AC2	Power cord (White)		AC 120V / AC 220 - 240V power supply

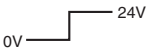
(CN3)

Pin No.	Signal Name	Destination	Status	Function
1	AC1	Thermostat (Red)		AC 120V / AC 220 - 240V power supply
2	GND	Fuser lamp (White)		AC 120V / AC 220 - 240V power supply

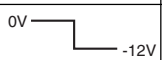
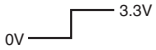
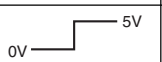
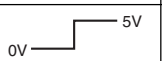
(CN4)

Pin No.	Signal Name	Destination	Status	Function
1	LP2	Choke Fuser (for Europe)		AC 120V / AC 220 - 240V power supply
2	AC2	Choke Fuser (for Europe)		AC 120V / AC 220 - 240V power supply

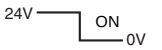
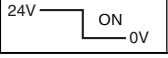
(CN5)

Pin No.	Signal Name	Destination	Status	Function
1	PVP	CPU PCB CN14-1		DC+24V power supply
2	SVP	CPU PCB CN14-2		DC+24V power supply
3	PGND	CPU PCB CN14-3	0V	Ground
4	PGND	CPU PCB CN14-4	0V	Ground

(CN6)

Pin No.	Signal Name	Destination	Status	Function
1	GND	CPU PCB CN6-15	0V	Ground
2	VLC	CPU PCB CN6-14		DC+5V power supply
3	-12V	CPU PCB CN6-13		DC-12V power supply
4	GND	CPU PCB CN6-12	0V	Ground
5	+12V	CPU PCB CN6-11		DC+5V power supply
6	GND	CPU PCB CN6-10	0V	Ground
7	GND	CPU PCB CN6-9	1V	Ground
8	3.3V	CPU PCB CN6-8		DC+3.3V power supply
9	3.3V	CPU PCB CN6-7		DC+3.3V power supply
10	GND	CPU PCB CN6-6	0V	Ground
11	GND	CPU PCB CN6-5	0V	Ground
12	VL	CPU PCB CN6-4		DC+5V power supply
13	VL	CPU PCB CN6-3		DC+5V power supply
14	—	CPU PCB CN6-2	—	—
15	VL_LSU	CPU PCB CN6-1		DC+5V power supply

(CN7)

Pin No.	Signal Name	Destination	Status	Function
1	PVCNT	CPU CN7-5		DC+24V ON/OFF signal
2	SVCNT	CPU CN7-4		Scanner DC+24V ON/OFF signal
3	ZCRS	CPU CN7-3		Zero cross signal
4	HTTR	CPU CN7-2		Fuser Lamp ON/OFF signal
5	EPCNT	CPU CN7-1		Charge high voltage ON/ OFF signal

Section V Troubleshooting

5.1 Service Mode

This copier has a service mode to check for abnormalities that may have occured. Each unit can be operated independently to detect the problem. The service mode is also used to change the programs in the copier and make adjustments.

1. Service mode functions

Mode	Mode name	Function
F1	Display check	● Start key turns ON the display. ● Stop key turns OFF the display.
F2	Single sheet copying	● Start key makes a single copy. ● Workable without the paper tray or paper (The total counter and electronic counter do not work.) ● Stop after exiting paper.
F3	Continuous copying	● Same as single copy mode for single-sided copying ● Clear/stop key stops the operation.
F4	Input/Output check	● To check components.
F5	Copier function programming	● Set copier defaults.
F6	Adjustment and programming	● For adjustment.
F7	Electronic counter	● Counter information.
F8	Copier operating adjustment	● Perform sub-operation for adjustment.
F9	Service mode	● Perform the following when the machine error occurs or maintenance is performed. Check the software version Output F5/F6 setting value list Output the memory dump list Factory setting

F mode operating method

- Press Auto/Photo select key, Paper Tray key and one key sequentially to move to the F mode.
- Press Auto/Photo select key and Clear/Stop key for cancellation.

ATTENTION

When the F4 mode is performed, the parameter of the image may be abnormal. Please reset the power.

2. F4 : Input/Output check

* The missing code number is [Not Used].

Code	Item	Selections
C01	a) (Reserved)	
	b) (Reserved)	
	c) (Reserved)	
	d) Drum detecting sensor	OFF: Not detected ON: Detected
C02	(Reserved)	
C03	a) (Reserved)	
	b) Paper exit sensor	OFF: Paper passing ON: No paper, Disconnected
	c) (Reserved)	
	d) (Reserved)	
C04-C05	(Reserved)	
C06	(Reserved)	
C07	a) (Reserved)	
	b) (Reserved)	
	c) Paper detecting sensor	OFF: Detected ON: No detected, Disconnected
	d) (Reserved)	
C08	a) Paper pass sensor	OFF: Paper passing ON: No paper, Disconnected
	b) (Reserved)	
	c) Home position sensor	OFF: Home position ON: Normal, Disconnected
	d) Polygon motor lock detection	OFF: Synchronized ON: Not synchronized
C09	a) Fan motor lock detection	OFF: Rotating ON: Stop
	b) Main motor lock detection	OFF: Rotating ON: Stop
	c) (Reserved)	
	d) (Reserved)	

(To be continued)

*Input check

Item a) 100% Zoom LED
b) 79% (For North America)
87% (Except North America)
c) 65% (For North America)
82% (Except North America)
d) 61% (For North America)
71% (Except North America)

F4 (Output check)

Code	Item	Selections
C51	Sheet bypass solenoid	30 sec. ON
C52	Paper feed solenoid	30 sec. ON
C53	Discharge lamp control	30 sec. ON
C54-C60	(Reserved)	
C61	Polygon motor control	No time limit
C62	Main motor control	No time limit
C63-C64	(Reserved)	
C65	Exhaust fan control	No time limit
C66	Optics lamp control	30 sec. ON
C67	(Reserved)	
C68	Registration roller clutch ON/OFF	5 sec. ON
C69	Fuser ON/OFF (with the temp. control)	No time limit

3. F5 : Copier function programming

* The missing code number is [Not Used].

Code	Item	Functions		Default
C00	Country version	0: Japanese 1: North American 2: Europian		1(for N.A) 2(except N.A)
C01	Frequency desired	0: 50Hz	Japan/Europe	0
		1: 60Hz	N.America	1
		(Automatic change in Japan)		
C02	Auto reset timer	0: None 1: 45sec. 2: 1min. 3: 2min.		2
C03	Energy saver mode	0: 5min. 1: 15min. 2: 30min. 3: 60min. 4: 1.5hrs. 5: 2hrs. 6: 3hrs. 7: 4hrs.		1
C07	Message display language	0: Japanese 1: English 2: German 3: French 4: Italian 5: Spanish 6: Swedish 7: Finnish 8: Dutch 9: Portuguese 10: Nowegian 11: Greek		1
C09	Fuser lamp phase control	0: OFF 1: ON		0
C11	Copy reservation	0: OFF 1: ON		1
C13	Auto OFF	0: None 1: 15min. 2: 30min. 3: 60min. 4: 1.5hrs. 5: 3hrs. 6: 4hrs.		2
C14	Paper size setting (For the main body)	0: Not installed 4: A4R 5: B5 6: B5R 7: A5 8: FLS1 9: FLS2 11: LEGAL 13: LETTER R 14: INVOICE 15: Reserved 16: Reserved		13(for N.A) 4(except N.A)
C16-C22	(Reserved)			
C25	Drum inferiority correction	0: Not corrected 1: Corrected		1
C26-C33	(Reserved)			
C40	Total counter double count	0: No 1: Legal		0
C42	Total counter	0: No 1: Yes		0
C50	Auto exposure default	0: Not detecting 1: Auto mode 2: Manual mode		2
C61	Original scanning lead edge	0: No 1: Yes		0
C64	(Reserved)			
C69	(Reserved)			
C81	B4/FLS switch	0: B4 1: FLS1 (13" x 8") 2: FLS2 (13" x 8.5")		1
C82-C94	(Reserved)			
C95	Paper size selection (Factory use)	0: Japan 1: N. America 2: Europe		1(for N.A) 2(except N.A)
C98	A4/FLS size detection for	0: A4-R 1: FLS1	F5C95=1(for N.A)*	3
	Sheet bypass	2: FLS2 3: LGL	F5C95=2(except N.A)*	0

* N.A = North America

4. F6 : Adjustment and programming

* The missing code number is [Not Used].

Code	Item	Functions	Default
C00	Adjusting horizontal ratio	Adjustment of the horizontal ratio for full size copying 0.1% (-9 to +9)	0
C01	Adjusting vertical ratio	Adjustment of the vertical ratio for full size copying 0.1% (-9 to +9)	0
C02	Adjusting copy ratio	Adjustment of the copy ratio 0.1% (-9 to +9)	7
C04	Original registration detecting timing	Adjustment of original registration detection timing 0.2mm (-30 to +30)	0
C05	Paper registration detecting timing	Adjustment of delay time for the registration roller clutch ON 0.25mm (-30 to +20)	0
C07	Registration void of image	Adjustment of registration void 0.425mm (-0 to +99)	0
C08	Trail edge timing of original	Adjustment of black line (–: Advanced +: Delayed) 0.5mm (-9 to 0)	0
C09	Trail edge timing of copy	Adjustment of black line at enlargement (–: Advanced +: Delayed) 0.425mm (-9 to +15)	0
C10-C16	(Reserved)		
C17	Grid standard voltage	Adjustment of the standard voltage 1.67V (+99 to -17)	0
C19	Bias standard voltage (developing)	Adjustment of the standard voltage 1.67V (+99 to -29)	0
C22	Transfer electric current (A4/LETTER)	Adjusting values for C40	0
C23	Transfer electric current (A5/INVOICE)	Adjusting values for C40	0
C24	Transfer electric current (B5)	Adjusting values for C40	0
C25	(Reserved)		
C31	Fuser temperature	Adjustment of fuser temperature 0.7 ˚C/step +: Raise the set up temperature. –: Lower the set up temperature.	0
C35	Toner level detecting value ①	0.02V (-14 to +20)	0
C36	Toner level detecting value correction ②	0.02V (-50 to +50)	0

(To be continued)

F6

Code	Item	Functions	Default
C37	Toner saver (for copying only)	0: OFF 1: Normal (less) 2: High saver	1
C40	Transfer electric current correction (Standard: A4 default)	Adjustment of the transfer electric current value	0
C41	Paper loop (Sheet bypass)	Adjustment of the loop length at the registration roller –: Less +: More 0.55mm (-40 to +40)	1
C42	Paper loop (Paper tray)	Adjustment of the loop length at the registration roller –: Less +: More 0.55mm (-50 to +50)	0
C44-C48	(Reserved)		
C50	Text/Photo mode exposure	Adjustment of the exposure in the Text/Photo mode –: Lighten +: Darken (-99 to +99)	0
C51	Photo mode exposure	Adjustment of the exposure in the Photo mode –: Lighten +: Darken (-99 to +99)	0
C53	CCD scanning position	Adjustment of the CCD scanning position 0.2mm (-44 to +44)	0
C56	Auto exposure for the text/photo mode	Adjustment of the auto exposure control (-99 to +99)	0
C60	Text/Photo mode contrast	Adjustment of the contrast –: week +: strong (-2 to +2)	0
C61	Photo mode contrast	Adjustment of the contrast –: week +: strong (-2 to +2)	0
C62	Text/Photo mode MTF (Edge emphasis)	Adjustment of the edge emphasis –: week +: strong (-2 to +2)	1
C63	Photo mode MTF (Edge emphasis)	Adjustment of the edge emphasis –: week +: strong (-2 to +2)	0
C69-C70	(Reserved)		
C75	CCD even pixel gain	Adjustment of the pixel gain level	255
C76	CCD odd pixel gain	Adjustment of the pixel gain level (Reference value)	255
C77	CCD even pixel offset	Adjustment of the pixel offset level	255
C78	CCD odd pixel offset	Adjustment of the pixel offset level (Reference value)	255
C84	Side position for the laser unit image	Adjustment of the side position (-7 to +7)	0
C90-C94	(Reserved)		
C99	F5/F6 initialization	Return the F5 and F6 values to the factory settings.	

5. F7 : Electronic counter

* The missing code number is [Not Used].

Code	Item	Description	Models
			V
C00-C03	(Reserved)		
C04	Drum count	Total copy indication since the last change is shown by the thousand. (The counter limit is "99999")	○
C05-C09	(Reserved)		
C10	Sheet bypass total count	Total count of paper from the sheet bypass	○
C12-C20	(Reserved)		
C21	Copy print count	Total count of copy paper	○
C24-C98	(Reserved)		
C99	Electronic counter clear	Clear all the electronic counters.	○

6. F8 : Copier operating adjustment

* The missing code number is [Not Used].

Code	Item	Description
C00	Full-speed unit move when replacing the exposure lamp unit	Start key moves the unit by 250mm to the end of the line. Clear/Stop key returns it to the home position.
C06	Machine error/paper jam code reading	a) Reset key indicates the latest 10 records of machine errors or paper jam chronologically. b) Reset key also indicates every 5 of the 10 records on the LCD by turns. **NOTE:** With over 10 records, the latest 10 records will be saved.
C07	Machine error/paper jam code clear	a) Press Reset key and the copy count is cleared to "0". b) Press Start key.
C08	Lamp unit lock for transportation (For factory use) •Electric counter and error record will be cleared.	a) START key moves the lamp unit to the lock position for transportation. (For factory adjustment) b) "0" appears on the LCD when the move is completed. No keys will be accepted after the lamp unit is locked. **NOTE:** The power switch can cancel this mode automatically and clear the error or jam code.
C10	Drum charge voltage check	The made up image is automatically checked without paper at F3 mode. Start key makes continuous copies. Clear/Stop key stops the operation.
C18	Printer γ check	Print the half tone image pattern.
C19	Lamp unit lock for transportation (For market)	a) START key moves the lamp unit to the lock position for transportation. b) "0" appears on the LCD when the move is completed. No keys will be accepted after the lamp unit is locked. **NOTE:** The power switch can cancel this mode automatically.
C20	Toner level sensor output check	START key rotates the main motor and stops rotating after the developer is mixed and the toner availability is shown.
C21	(Reserved)	
C50	Test print	START key performs test print.

7. F9 : Service mode

* The missing code number is [Not Used].

Code	Item	Description
C01	Firmware version	Confirmation of the software version

* After press the start key, the firmware version indicates first three digits and last one alternatively.

5.2 Self-diagnostics/Machine Malfunctions

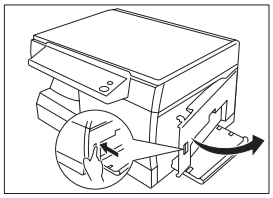
1. User error: U code

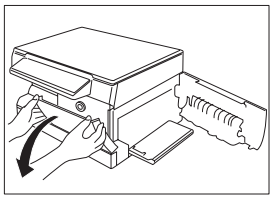
Error code	Description	Remarks
U1	Right cover (opened)	

Error code	Description	Check Item
U1	Right cover (opened)	1) Is the right cover closed? 2) Contact failure of the right cover open/close sensor connector 3) Right cover open/close sensor malfunction 4) Contact failure of the low voltage power supply PCB connector 5) Low voltage power supply PCB malfunction 6) Contact failure of the main CPU PCB connector 7) Main CPU PCB malfunction

2. Paper Jam : J code

Error code	Description
J01	Paper tray slip jam
J17	The paper pass sensor remains ON after the defined time elapsed.
J30	When feeding paper from the sheet bypass: The registration roller paper pass sensor is NOT turned OFF within the defined time after the registration roller is turned ON.
J31	When feeding paper from the paper tray: The registration roller paper pass sensor is NOT turned OFF within the defined time after the registration roller is turned ON.
J33	The registration roller paper pass sensor still remains ON. (Jam remains)
J40	The paper exit sensor is NOT turned ON within the defined time after the registration roller is turned ON.
J41	The paper exit sensor is NOT turned OFF within the defined time.
J42	The paper exit sensor still remains ON. (Jam remains)
J99	Others





- Open the right cover.
- Are you sure that no more pieces of paper are in the paper exit area?
- JAM clearing knob

3. Machine Error : E code

When the CPU PCB fails to control the machine, or some problems occur, the copier stops the operation and the error indication (E code) appears on the LCD.
Regarding the error indication, you see E1 to E5 error origin block and the number which describes the error cause on the LCD.

E1 : Optics unit error

Error code	Item	Description
E1-01	Optics scanning failure	The home position sensor is NOT turned ON/OFF within the defined pulses after starting scanning.
E1-20	HSYNC (LSYNC) malfunction	LSYNC is not generated or within the defined time after the laser is turned ON.
E1-22	Polygon motor malfunction	Fail to detect the sync signal of the polygon motor rotation.
E1-23	Registration adjustment failure	Fail to adjust the scanner registration.
E1-30	CCD gain adjustment failure	Fail to adjust the CCD gain.
E1-31	Exposure lamp ON failure	The exposure lamp is NOT turned ON.
E1-32	Exposure lamp OFF failure	The exposure lamp is NOT turned OFF.
E1-33	CCD offset adjustment failure	Fail to adjust the CCD offset.

E3 : Toner cartridge error

Error code	Item	Description
E3-10	High voltage power supply leak	Detect the HVPS leak for charging.
E3-20	Main motor rotation abnormality	Detect the synchronous error despite the assignment to rotate the main motor. Or detect the motor rotating normally despite the assignment to stop it.

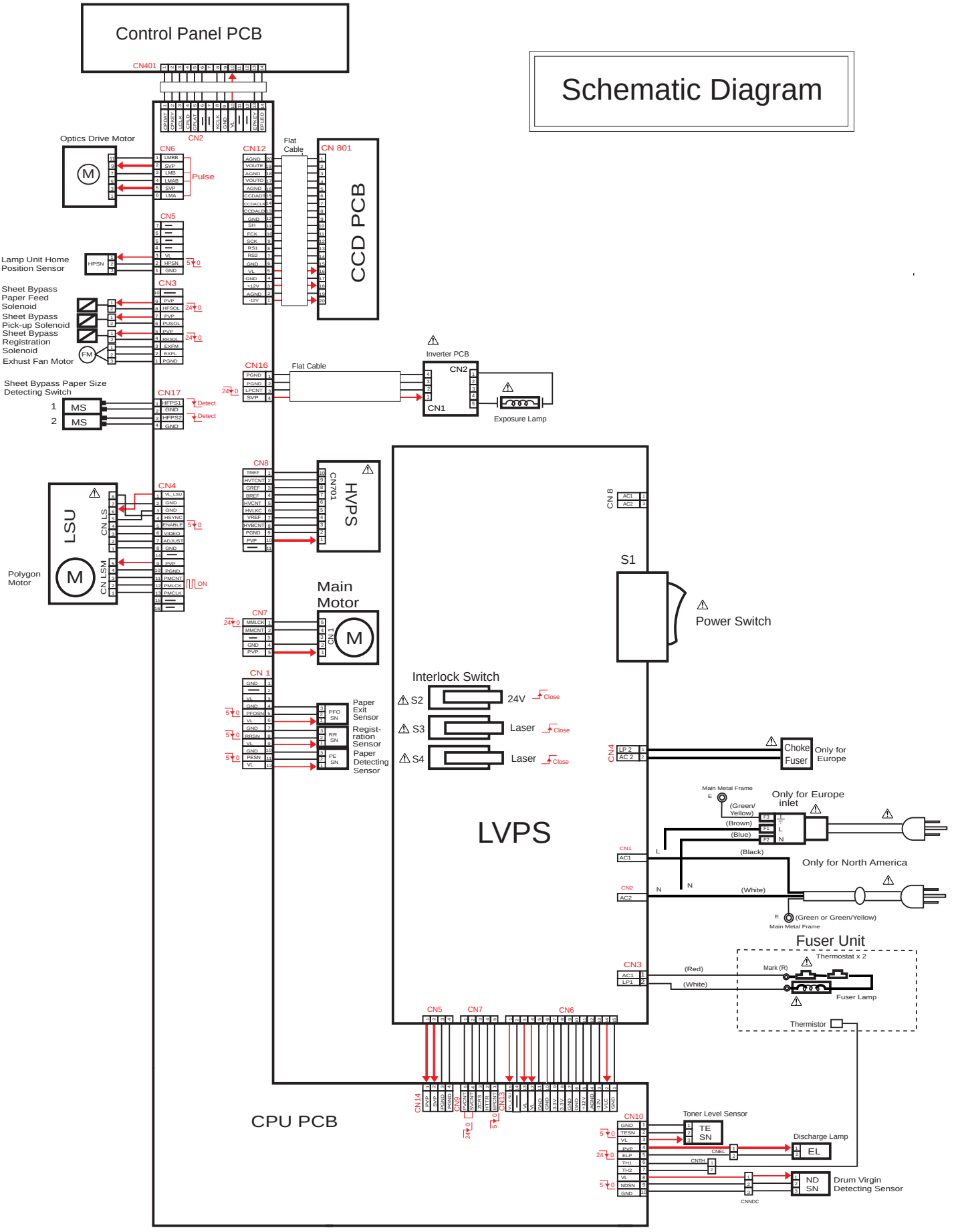
E4 : Fuser unit error

Error code	Item	Description
E4-01	Thermistor malfunction	The fuser temperature sensor malfunction.
E4-01	Temperature control failure	Fail to reach the defined temperature within the defined time after the fuser lamp is turned ON.
E4-10	Fan malfunction	Detect the exhaust fan rotating despite the assignment to stop it. Or detect the fan stopped despite the assignment to rotate it.

E5 : System

Error code	Item	Description
E5-01	DC24V power supply abnormality	Fail to output DC24V.
E5-04	DC12V power supply abnormality	Fail to output DC12V when ready.
E5-05	Scanner 24V power supply abnormality	Detect an error with the scanner 24V power supply control.
E5-18	Shading adjustment error	An error occurs when adjusting the shading (black or white).
E5-30	Energy-saver microcomputer failure	Communication error of the energy-saver microcomputer.
E5-35	FROM card write error	Write error for the flash ROM.
E5-41	Registration control PCB malfunction	The optics scanning or registration is • working despite the assignment to stop it. • not working within the defined time despite the assignment to work.
E5-42	Total counter error	Counter cable is disconnected
E5-50	FIFO operation error	Detect the operation failure of FIFO.
E5-55	PM2 error	PM2 stops abnormally.
E5-58	D/A transfer failure	DAC transfer completion interruption timeout error for CCD setting.
E5-59	Scanner LSYNC abnormality	SLSYNC interruption timeout error when detecting a peak
E5-72	GA#1 α 1 access failure	GA#1 α 1 verify error (Image processing format error)
E5-73	GA#1 α 2 access failure	GA#1 α 2 verify error (Other errors)
E5-74	GA#1 α SRAM access failure	GA#1 α built-in SRAM error
E5-75	GA#1 α CLK access failure	GA#1 α built-in white shading RAM error
E5-76	GA#2 access failure	GA#2 verify error
E5-77	GA#3 R/W error	GA#3 Read/Write hard error
E5-89	GA#1 R/W error	GA#1 Read/Write hard error
E5-99	Fatal error	Fatal error occurs with unknown case.

Schematic Diagram



IMPORTANT SAFETY NOTICE

THE PARTS WITH ⚠ MARK ON THIS SCHEMATIC DIAGRAM INCORPORATE SPECIAL FEATURES IMPORTANT FOR SAFETY
WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURE'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE PARTS WITH ⚠ MARK ON THE SCHEMATIC.

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Use and Ordering Information

For USA

1. Information contained in this Parts manual is subject to change.
   Change notices and supplementary pages will be issued on a timely basis.
2. Electrical parts supplied may include previously used components.
3. A Numerical Part Number List is located at the rear of this manual.
4. This manual was developed and is supplied to authorized servicing dealers by Panasonic Document Imaging Co. for the sole purpose of providing information necessary for the equipment's proper support. It is intended that this information be confidential and may not be reproduced without prior written consent from Panasonic Document Imaging Co.
5. Panasonic Document Imaging Co. reserves the right to change any information enclosed herein without prior notification.
   (This includes, but is not limited to, parts pricing and availability, and text.)
6. In common column, "C" indicates part is used in previous models, "N" indicates part is used only in Model DP-150.
7. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
8. Rank column, "A, B, C, D," indicates the parts replacement frequency.
   - A: Most frequently used (PM parts)
   - B: Frequently used
   - C: Occasionally used
   - D: Hardly used

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7. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
8. Rank column, "A, B, C, D," indicates the parts replacement frequency.
   - A: Most frequently used (PM parts)
   - B: Frequently used
   - C: Occasionally used
   - D: Hardly used

Covers

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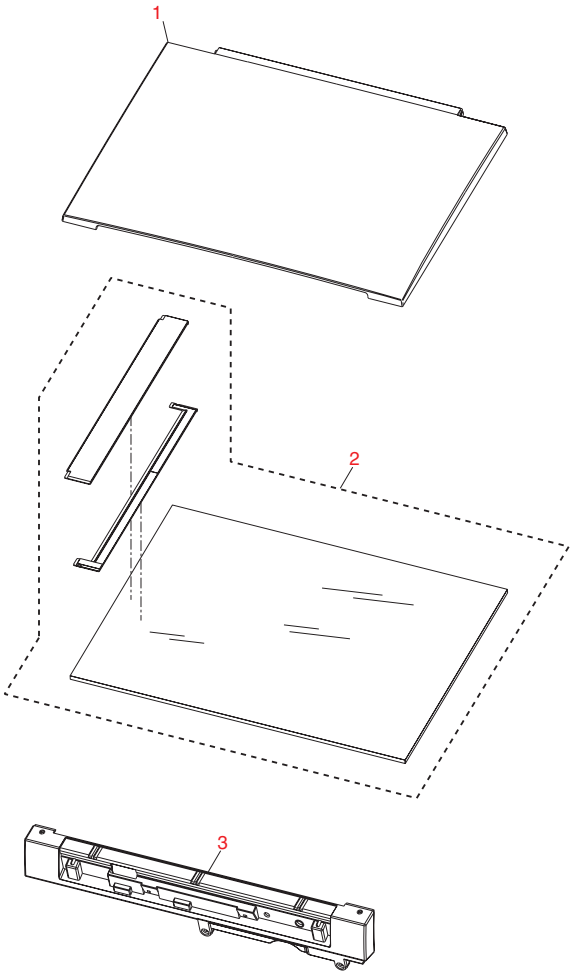

Cover

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPNA0755	Platen Cover ⚠	1	N	D
2	FFPXK01S01	Platen Glass Ass'y ⚠	1	N	D
3	FFPNA07572	Control Panel Guide Cover ⚠	1	N	D

Covers

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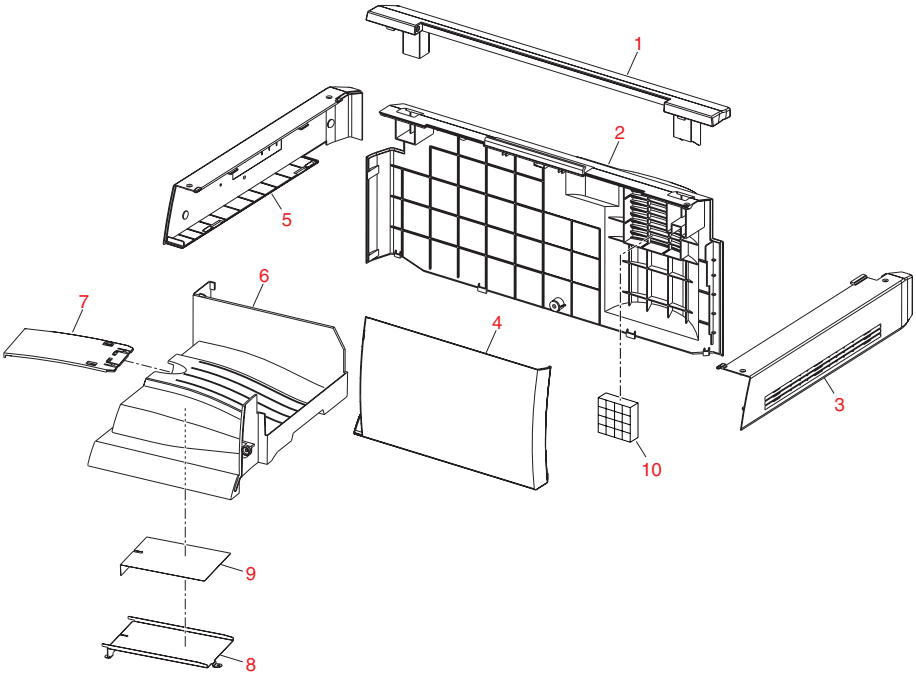

Covers

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPNH0074	Platen Hinge	1	N	D
2	FFPNA07512	Rear Cover ⚠	1	N	D
3	FFPNA0750	Right Upper Cover ⚠	1	N	D
4	FFPNA07482	Front Cover ⚠	1	N	D
5	FFPNA07492	Left Upper Cover ⚠	1	N	D
6	FFPNA07522	Paper Exit Cover ⚠	1	N	D
7	FFPNA07531	Paper Exit Support Guide ⚠	1	N	D
8	FFPKE1182	LVPS Cover	1	N	D
9	FFPJA0338	LVPS Insulation Sheet	1	N	D
10	FFPHJ0057	Ozone Filter	1	N	A

Covers

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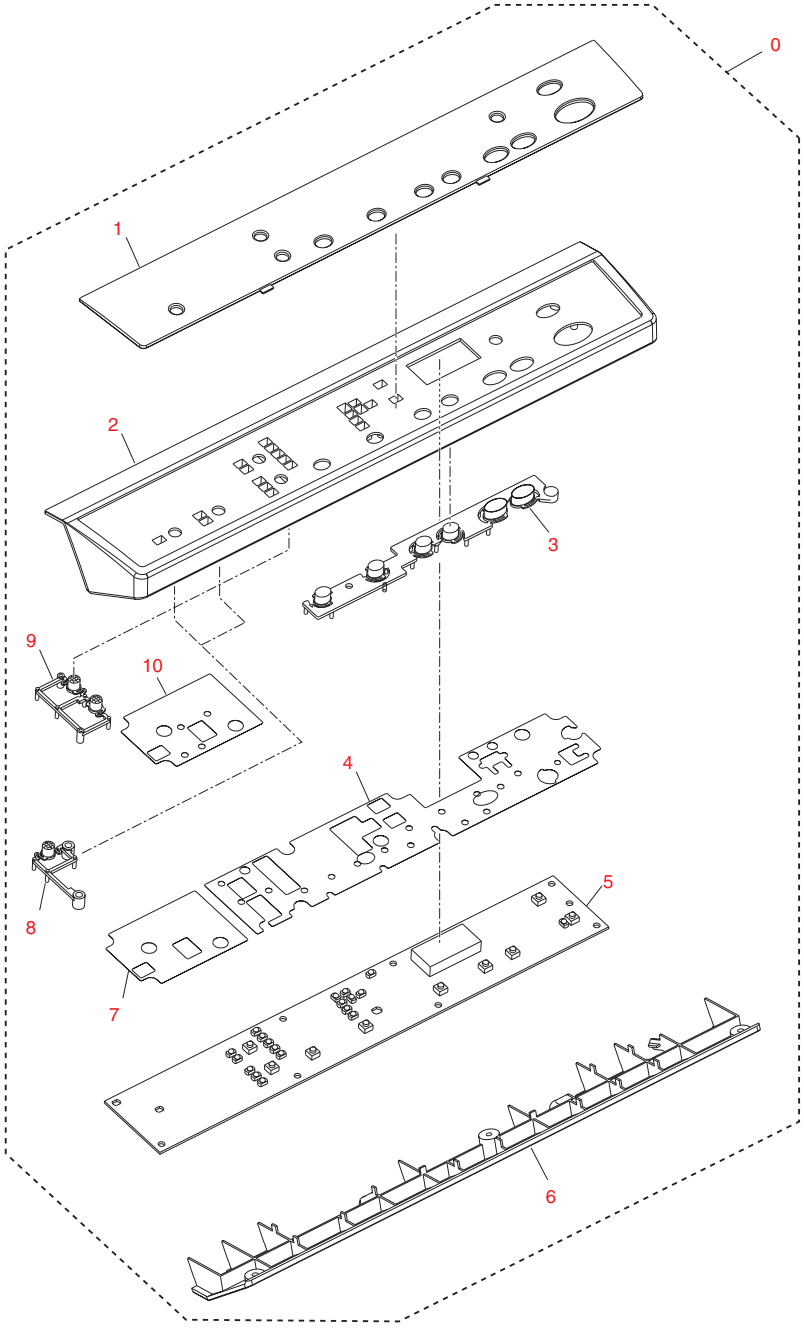

Covers

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
0	FFPXB01S01	Control Panel Ass'y	1	N	D
1	FFPPA04569	Control Panel Indication Plate V	1	N	D
2	FFPNA0754	Control Panel Cover ⚠	1	N	D
3	FFPLB0211	Key Top D	1	N	D
4	FFPJA0334	Insulation Sheet 4	1	N	D
5	FFPWB0667	PCB Control Panel	1	N	B
6	FFPNA0758	Control Panel Rear Cover	1	N	D
7	FFPJA0335	Insulation Sheet 5	1	N	D
8	FFPLB02161	Option Key Top	2	N	D
9	FFPLB0215	Copy Mode Key	1	N	D
10	FFPJA0336	Insulation Sheet 6	1	N	D

Frame

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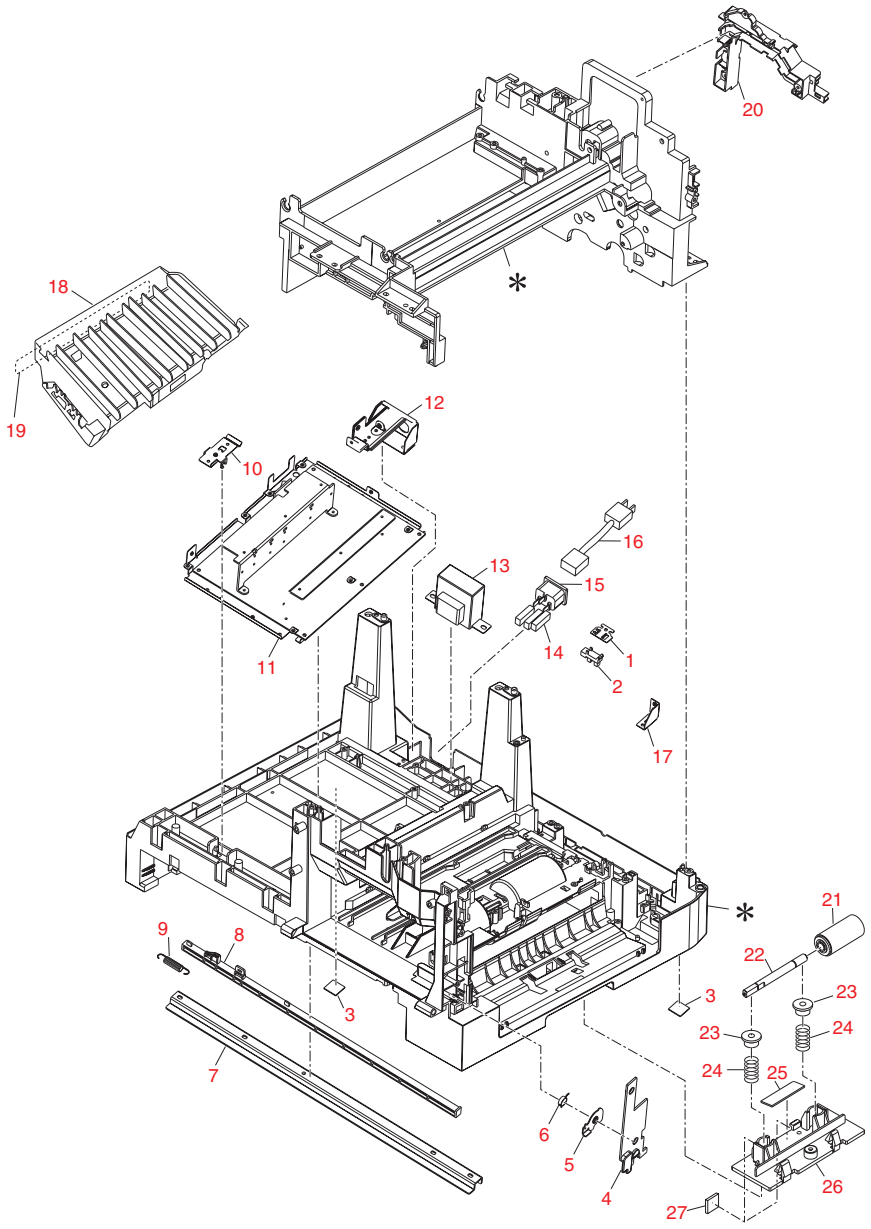

NOTE: The Part(s) marked with * is (are) not available

Frame

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPKA0198	Sensor Plate	1	N	D
2	GP1A73A	Sensor	1	C	C
3	FFPKN0035	Coupler	2	N	D
4	FFPNA07471	Protection Cover	1	N	D
5	FFPKS12591	Right Lock Plate	1	N	D
6	FFPLQ05011	Lock Plate Spring	1	N	C
7	FFPKU0202	Support Stay	1	N	D
8	FFPLL0664	Right SW Lever	1	N	D
9	FFPLR0327	Lever Return Spring	1	N	C
10	FFPLL0665	Right SW Support Lever	1	N	D
11	FFPWB06691	PCB AC/DC Driver ⚠	1	N	B
12	FFPKR1977	Power Cord Bracket	1	N	D
13	CH48T46	Choke Coil (Except North America)	1	N	D
14	FFPWC1922	AC Cable ⚠	1	N	D
15	NC176F63512	AC Inlet	1	N	D
16	FFPEV0131	Power Cord (for North America) ⚠	1	N	D
16	FFPEV0152	Power Cord (for U.K.) ⚠	1	N	D
16	FFPEV0146	Power Cord (for Australia.) ⚠	1	N	D
16	FFPEV0144	Power Cord (for Europe) ⚠	1	N	D
17	FFPKR1960	High Voltage Bracket	1	N	D
18	FFPXA12S00	LSU Ass'y	1	N	D
19	FFPWB0670	Discharge LED	1	N	C
20	FFPKF1528	Cable Guide A	1	N	D
21	FFPMA0517	DFP Roller	1	N	A
22	FFPLG1779	DFP Roller Shaft	1	N	D
23	FFPMQ0569	Bushing	2	N	D
24	FFPLP12251	DFP Pressure Spring	2	N	C
25	FFPHK1169	Mylar	1	N	D
26	FFPKD1678	DFP Pressure Plate	1	N	D
27	FFPLM0052	Felt	2	N	D

Frame

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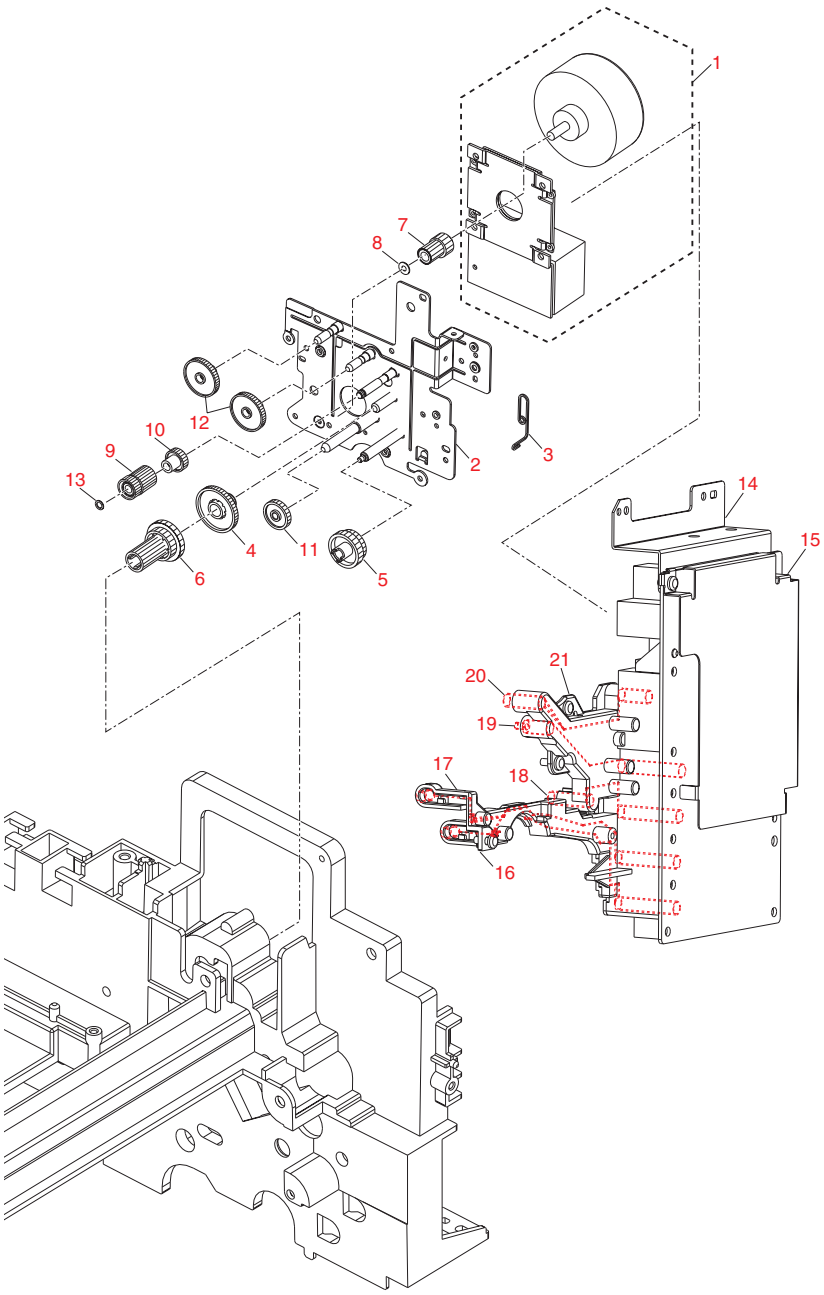
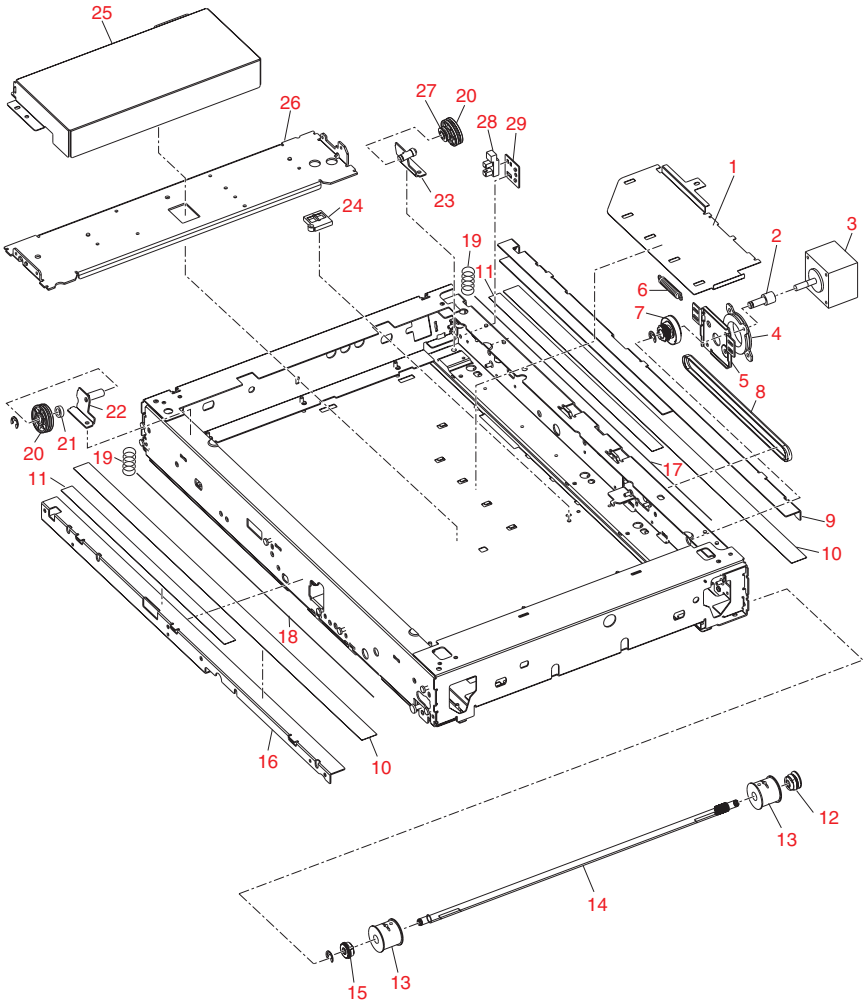


Frame

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	DNQ12A62R21A	Main Motor	1	N	C
2	FFPXA02S00	Main Motor Frame Ass'y	1	N	D
3	FFPLP1209	Spring	1	N	D
4	FFPMF1283	Registration Gear	1	N	D
5	FFPMF1280	Drum Gear B	1	N	D
6	FFPMF1281	Main Gear	1	N	D
7	FFPMF1282	Drum Gear A	1	N	D
8	FFPMV0051	Polyslider	1	N	D
9	FFPMF1285	Fuser Idle Gear A	1	N	D
10	FFPMF1286	Fuser Idle Gear B	1	N	D
11	FFPMF1284	Screw Gear	1	N	D
12	FFPMF1287	Paper Exit Gear	2	N	D
13	FFPMV0050	Polyslider	1	N	D
14	EUKMBN782HA	High Voltage PCB ⚠	1	N	B
15	FFPKR1957	High Voltage PCB Plate	1	N	D
16	FFPLP11651	Terminal Spring (Transfer)	1	N	C
17	FFPLP11661	Terminal Spring (Separation)	1	N	C
18	FFPLP11691	Terminal Spring (Bias)	1	N	C
19	FFPLP11671	Terminal Spring (Grid)	1	N	C
20	FFPLP11681	Terminal Spring (Charge)	1	N	C
21	FFPXA15S00	High Voltage Holder Ass'y	1	N	D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Optics Unit

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPKD1675	CCD Cable Holder	1	N	D
2	FFPMF1330	Motor Gear	1	N	D
3	KH39FM2-007	Scanner Motor	1	N	D
4	FFPHL0012B	Damper	1	N	D
5	FFPKR1986	Motor Bracket	1	N	D
6	FFPLP1215	Motor Tension Spring	1	N	C
7	FFPMF1329	Motor Drive 2wer Gear	1	N	D
8	FFPMN0150	Motor Belt	1	N	D
9	FFPKF15631	Rail Rear	1	N	D
10	FFPHK1151	Rail Sheet Full Speed	2	N	D
11	FFPHK1152	Rail Sheet Half Speed	2	N	D
12	FFPMB0240	Half Speed Drive Pulley	1	N	D
13	FFPMD0027	Wire Drum	2	N	D
14	FFPLG1775	Drive Shaft	1	N	D
15	FFPMQ0540	Bearing	1	N	D
16	FFPKF15621	Rail Front	1	N	D
17	FFPMW0050	Scanner Wire R	1	N	D
18	FFPMW0051	Scanner Wire F	1	N	D
19	FFPLP1216	Wire Tension Spring	2	N	C
20	FFPMB0301	Idle Pulley	2	N	D
21	FFPMQ0526	Bearing	1	N	D
22	FFPLK0395	Wire Tension Arm R	1	N	D
23	FFPLK0394	Wire Tension Arm F	1	N	D
24	FFPKD1674	Lamp Cable Holder	1	N	D
25	FFPXK02S00	CCD PCB Ass'y	1	N	C
26	FFPKB10531	Lens Unit Bracket	1	N	D
27	FFPMB0302	Wire Tension Pulley	1	N	D
28	GP1A73A	Sensor	1	C	C
29	FFPKR1989	Bottle Rotation Sensor Bracket	1	N	D

Optics Unit

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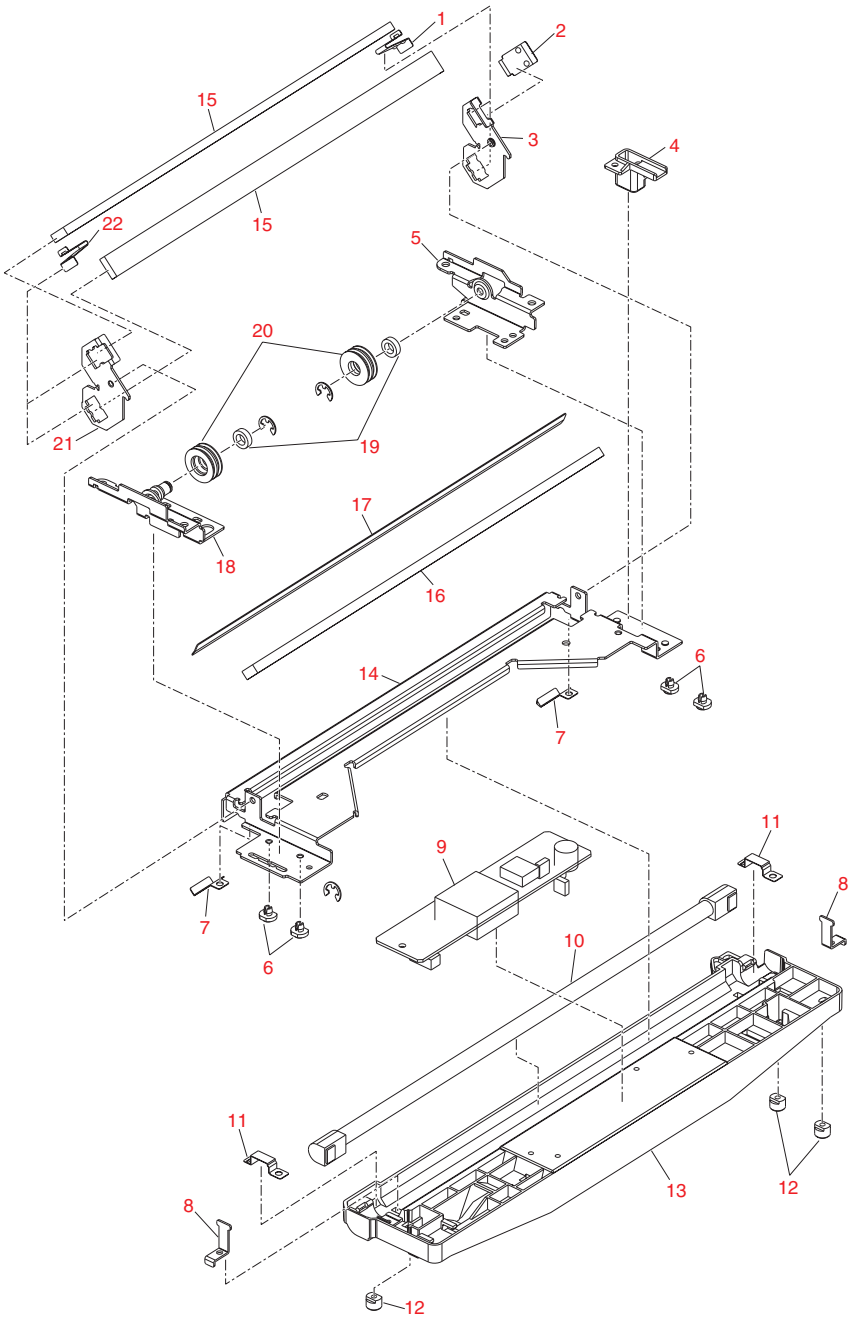
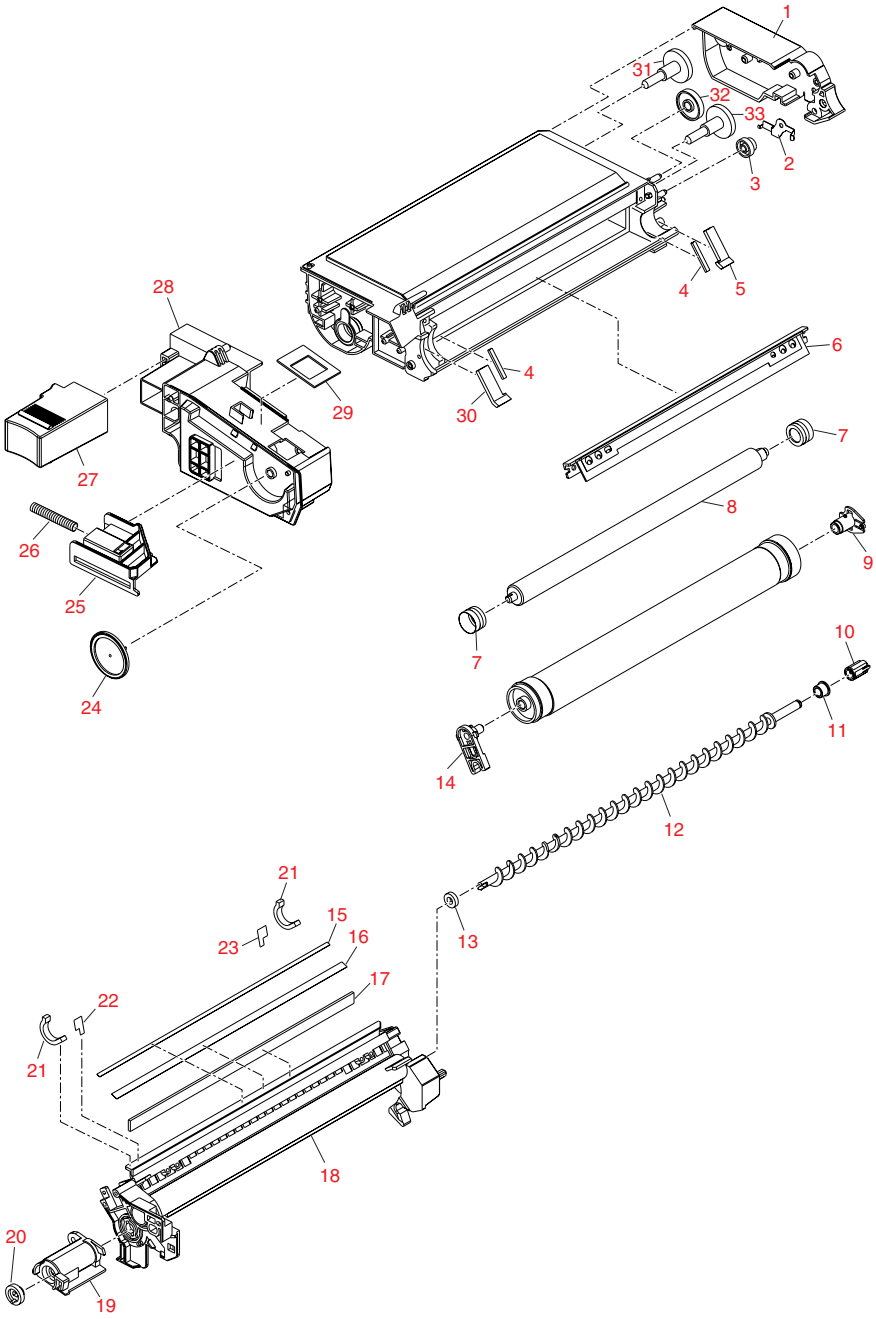


Optics Unit

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPLQ0510	2/3 Mirror Spring R	2	N	C
2	FFPLQ0508	No.1Mirror Spring R	1	N	C
3	FFPKD1672	Frame 2/3 Mirror Front	1	N	D
4	FFPKF1561	Cable Guide 2	1	N	D
5	FFPKB1046	Half Speed Frame F	1	N	D
6	FFPKM0342	Scanner Slider	4	N	D
7	FFPLQ0507	No.1Mirror Spring F	2	N	C
8	FFPKD1671	Belt Holder Full Speed	2	N	D
9	24X13327MD	Inverter	1	N	D
10	HCSN8PYG318	Optics Lamp	1	N	B
11	FFPKD1670	Lamp Holder	2	N	D
12	FFPKM0341	Scanner Slider	3	N	D
13	FFPKB1044	Full Speed Frame	1	N	D
14	FFPKB1045	Full Speed Frame	1	N	D
15	FFPGC0225	No.2/3 Mirror	2	N	D
16	FFPGC0223	No.1Mirror	1	N	D
17	FFPGC0224	Reflector Mirror	1	N	D
18	FFPKB1047	Half Speed Frame R	1	N	D
19	FFPMQ0540	Bearing	2	N	D
20	FFPMB0300	Half Speed Pulley	2	N	D
21	FFPKD1673	Frame 2/3 Mirror Rear	1	N	D
22	FFPLQ0509	2/3 Mirror Spring F	2	N	C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Toner Cartridge/Drum Unit

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPKE1159	Side Cover R	1	N	D
2	FFPLQ0496	Developer Bias Terminal Plate	1	N	D
3	FFPMF1301	Idle Gear 3	1	N	D
4	FFPHP0828	Seal	2	N	D
5	FFPHP08302	Side Seal, R	1	N	D
6	FFPHK1135	Cleaning Blade	1	N	D
7	FFPMF1297	Magnetic Roller Gear	2	N	D
8	FFPDN0025	Magnetic Roller	1	N	D
9	FFPKD1642	Drum Support, R	1	N	D
10	FFPHQ0080	Coupling	1	N	D
11	FFPMQ0646	Bushing	1	N	D
12	FFPHG0058	Waste Toner Coil	1	N	D
13	FFPMQ0647	Bushing	1	N	D
14	FFPKD1641	Drum Support, F	1	N	D
15	FFPGH01051	Drum Sheet	1	N	D
16	FFPHP0837	Cleaning Sheet	1	N	D
17	FFPKD1643	Toner Tray	1	N	D
18	FFPKB10271	Drum Frame	1	N	D
19	FFPHD0034	Pipe	1	N	D
20	FFPKM0339	Shutter	1	N	D
21	FFPKN0415	Side Sponge, F	2	N	D
22	FFPHP0838	Side Seal, F	1	N	D
23	FFPHP0839	Side Seal, R	1	N	D
24	FFPMF1303	Screw Gear 1	1	N	D
25	FFPKM03383	Waste Toner Bottle Shutter	1	N	D
26	FFPLP1179	Shutter Spring	1	N	C
27	FFPLA01132	Developer Pressure Knob	1	N	D
28	FFPXG05S01	Waste Toner Bottle Ass'y	1	N	D
29	FFPHP08331	Waste Toner Seal	1	N	D
30	FFPHP08292	Side Seal, L	2	N	D
31	FFPMF1300	Gear 1	1	N	D
32	FFPMF1299	Idle Gear 2	1	N	D
33	FFPMF1298	Idle Gear 1	1	N	D

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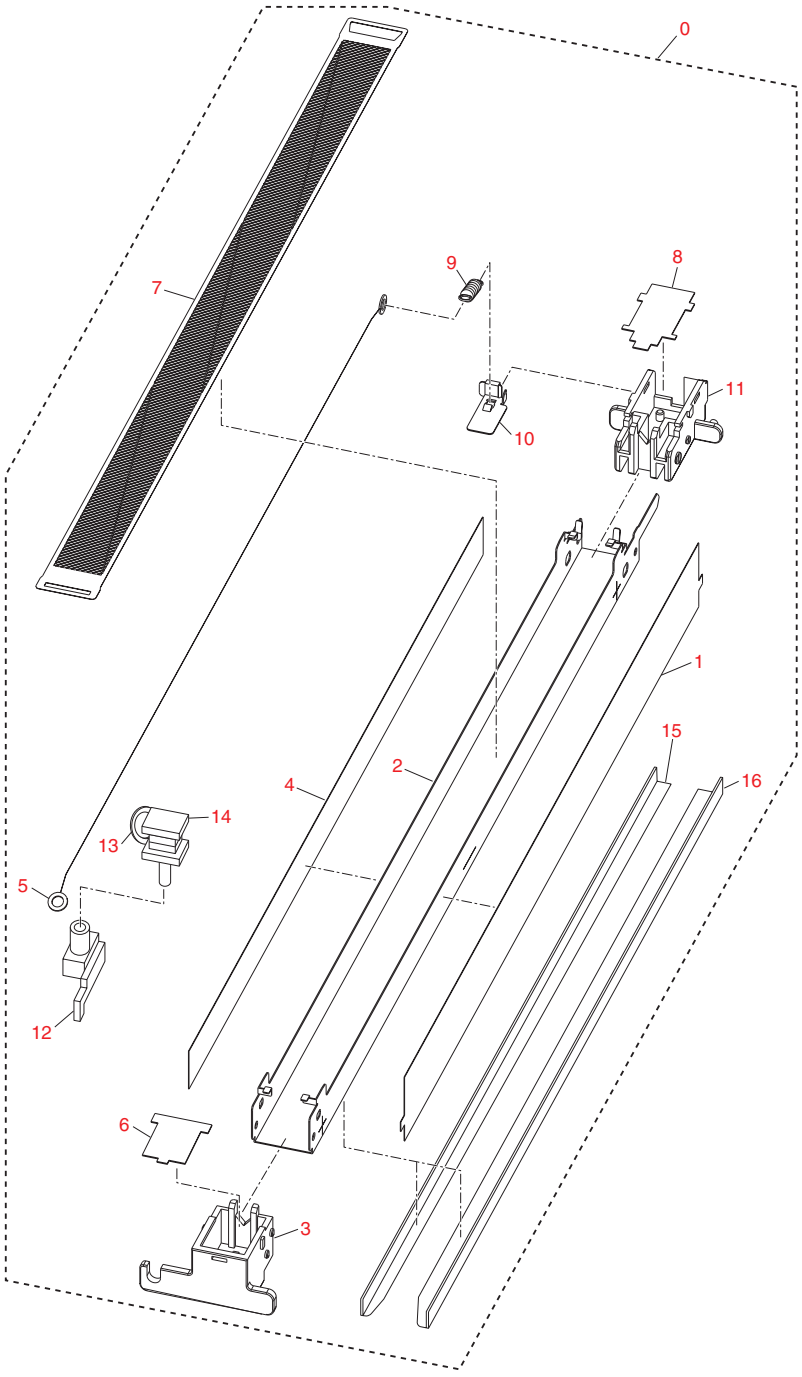

Corona Unit

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
0	FFPXG64S00	Corona Ass'y	1	N	C
1	FFPHK1164	Mylar 1	1	N	D
2	FFPKE1161	Case	1	N	D
3	FFPJA0327	Base, F	1	N	D
4	FFPHK1136	Mylar 2	1	N	D
5	FFPEY0074	Wire	1	N	C
6	FFPJA0329	Terminal Cover, F	1	N	D
7	FFPKS1257	Grid	1	N	D
8	FFPJA0330	Terminal Cover, R	1	N	D
9	FFPLP1180	Spring	1	N	C
10	FFPDF0343	Wire Terminal 1	1	N	D
11	FFPJA0328	Base, R	1	N	D
12	FFPLL0684	Cleaner Lever	1	N	D
13	FFPLM0050	Cleaner	1	N	C
14	FFPHS0041	Cleaner Cap	1	N	D
15	FFPHK1182	Corona Sheet 1	1	N	D
16	FFPHK1184	Corona Sheet 2	1	N	D

Paper Feed Section

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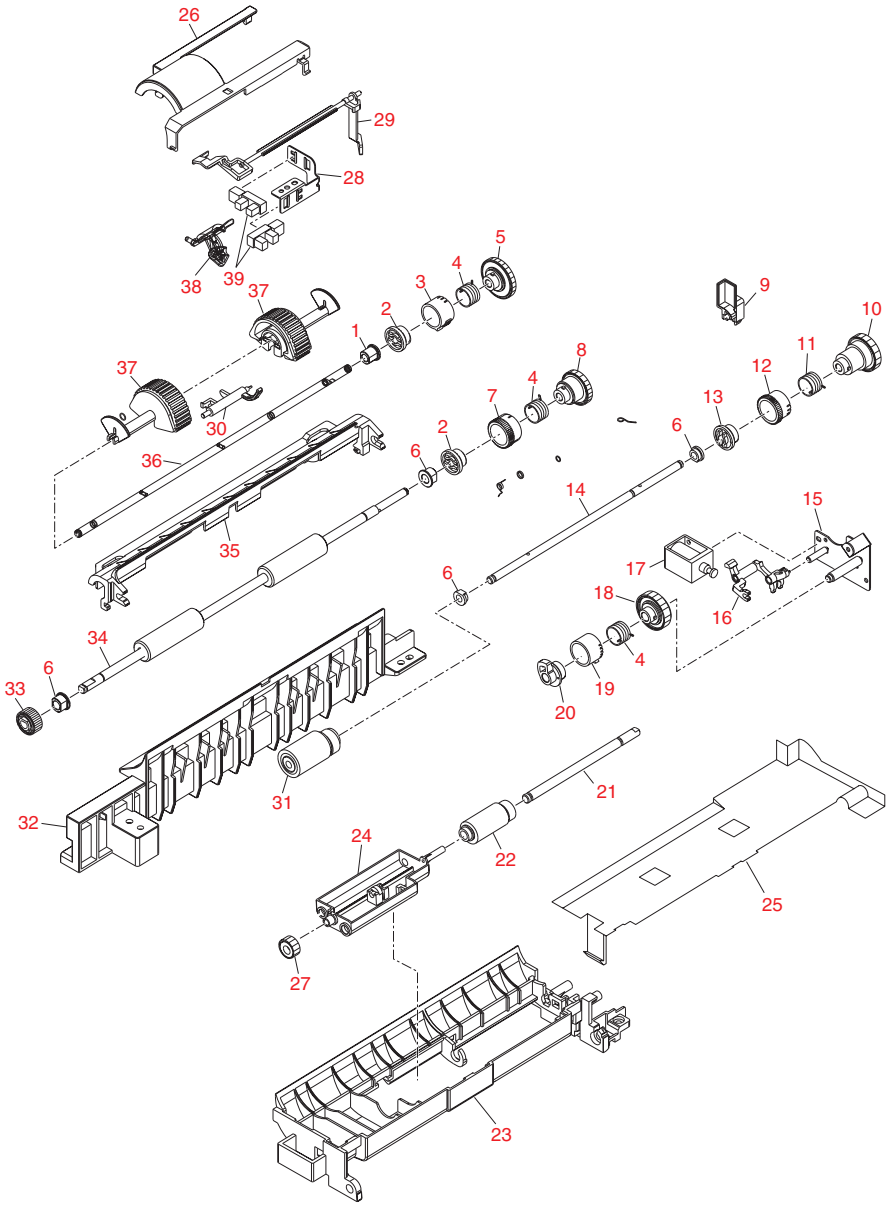

Paper Feed Section

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPMQ0650	Bushing 3	1	N	D
2	FFPLU00842	Clutch Boss	2	N	D
3	FFPLT0140	Sleeve	1	N	D
4	FFPLR03361	Clutch Spring	3	N	C
5	FFPMF1313	Clutch Gear	1	N	D
6	FFPMQ0649	Bushing 2	4	N	D
7	FFPLT0141	Ratchet Sleeve D	1	N	D
8	FFPMF1314	Registration Clutch Gear	1	N	D
9	FFPKE11691	Cable Cover	1	N	D
10	FFPMF1320	Bypass Clutch Gear	1	N	D
11	FFPLR03342	Clutch Spring A	1	N	C
12	FFPLU00852	Bypass Clutch Boss	1	N	D
13	FFPMQ0648	Bushing 1	1	N	D
14	FFPXQ05S00	Bypass Paper Feed Roller Shaft Ass'y	1	N	D
15	FFPXQ02S001	Solenoid Bracket C Ass'y	1	N	D
16	FFPLK03871	Ratchet Finger A	1	N	D
17	TDS-06A-84	Solenoid	1	N	C
18	FFPMF1321	Cam Clutch Gear	1	N	D
19	FFPLT01431	Ratchet Sleeve B	1	N	D
20	FFPLJ01123	Cam	1	N	D
21	FFPLG1762	Pick-Up Roller Shaft	1	N	D
22	FFPMA0685	Bypass Pick-Up Roller	1	N	A
23	FFPKD16604	Bypass Paper Feed Frame	1	N	D
24	FFPKR1973	Bypass Paper Bracket	1	N	D
25	FFPKE11683	Frame Cover	1	N	D
26	FFPND01681	Sensor Cover	1	N	D
27	FFPMF1319	Bypass Paper Feed Gear B	1	N	D
28	FFPKR1971	Sensor Plate	1	N	D
29	FFPLL0672	Sensor Lever B	1	N	D
30	FFPLK03862	Sensor Arm	1	N	D
31	FFPMA0684	Bypass Paper Feed Roller	1	N	A
32	FFPKF15345	Middle Frame Paper Feed Guide	1	N	D
33	FFPMF1332	Registration Roller Gear	1	N	D
34	FFPMA0682	Registration Roller	1	N	D
35	FFPKE11671	Registration Roller Cover	1	N	D
36	FFPXQ04S00	Paper Feed Roller Shaft Ass'y	1	N	D
37	FFPXA23S00	Paper Feed Roller Ass'y	2	N	D
38	FFPLL06711	Sensor Lever A	1	N	D
39	GP1A73A	Sensor	2	C	C

Fuser Unit

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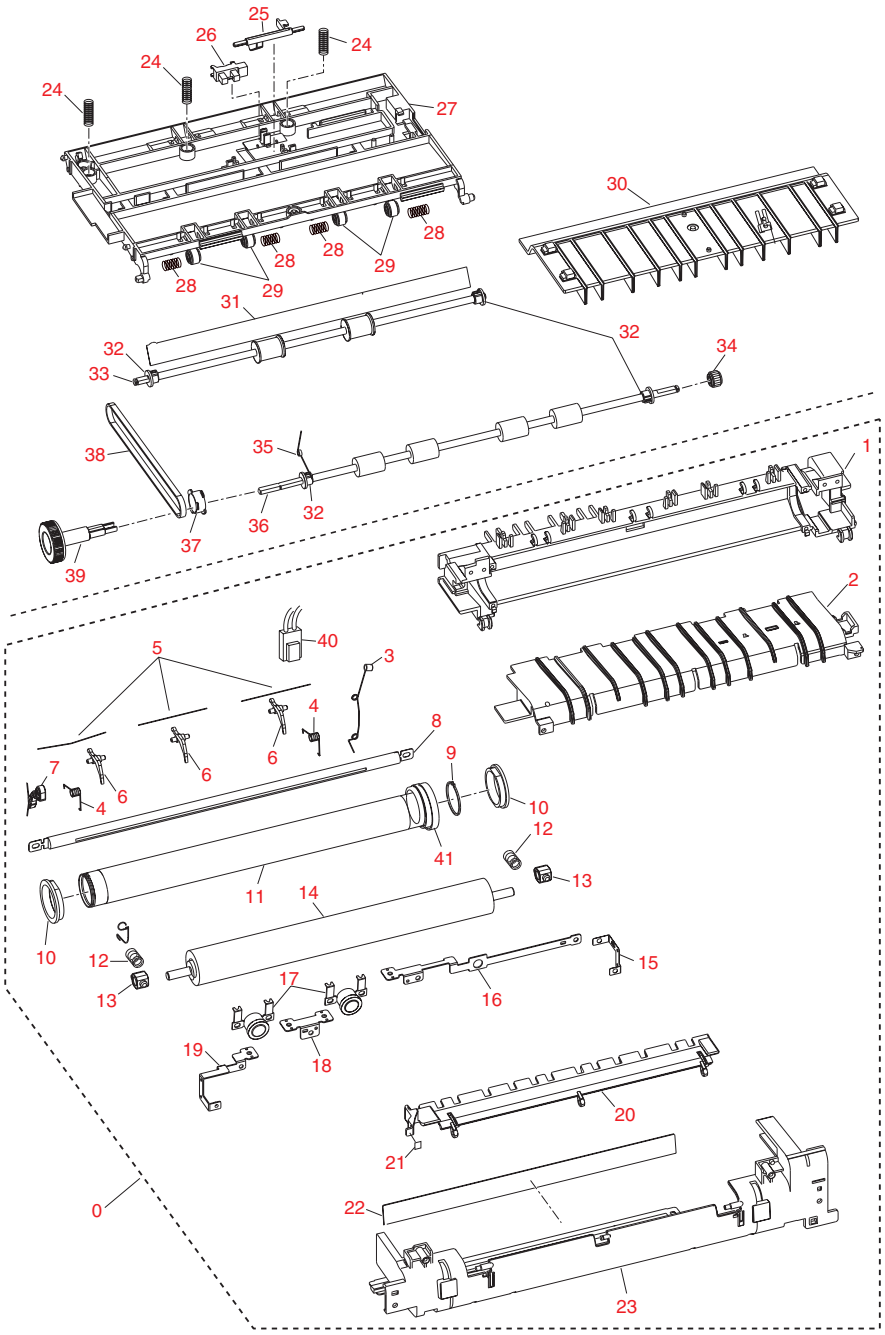

Fuser Unit

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
0	FFPUT01S01	Fuser Unit	1	N	D
1	FFPKB1041	Fuser Frame Upper	1	N	D
2	FFPKF15452	H/R Separation Paper Guide	1	N	D
3	FFPLR0339	Ground Spring 2	1	N	C
4	FFPLR0348	Spring Paper Jam	2	N	C
5	FFPLN0015	Finger Spring	3	N	C
6	FFPLK0391	Separation Finger	3	N	A
7	FFPLR03402	Ground Spring 3	1	N	C
8	QIR120800MDB	Lamp ⚠	1	N	B
9	FFPLN0016	Snap Ring	2	N	D
10	FFPMQ0653	Heat Roller Bushing	2	N	D
11	FFPMA0689	Heat Roller	1	N	A
12	FFPLP11991	Pressure Spring	2	N	C
13	FFPMQ0652	Pressure Roller Bushing	2	N	A
14	FFPMA06901	Pressure Roller	1	N	A
15	FFPDF0346	Lamp Terminal 2	1	N	D
16	FFPDF0348	Conductor Plate 1	1	N	D
17	FFPET0018	Thermostat ⚠	2	N	C
18	FFPDF0347	Conductor Plate 2	1	N	D
19	FFPDF0345	Lamp Terminal 1	1	N	D
20	FFPKF15641	Guide Paper Jam	1	N	D
21	FFPKP0106	Heat-insulating Felt	1	N	D
22	FFPKF15422	Fuser Entry Guide	1	N	D
23	FFPKB10422	Fuser Frame Lower	1	N	D
24	FFPLP1200	Hinge Spring	3	N	C
25	FFPLL0679	Paper Exit Sensor Lever 2	1	N	D
26	GP1A73A	Sensor	1	C	C
27	FFPKF15502	Paper Exit Gear 2 Upper	1	N	D
28	FFPLP09461	Axle Spring	4	N	D
29	FFPMA06951	Pinch Roller	4	N	D
30	FFPKF1544	Exit Paper Guide 1Upper	1	N	D
31	FFPDU0063	Discharge Brush	1	N	D
32	FFPMQ0654	Exit Roller Shaft Bushing	4	N	D
33	FFPMA06921	Exit Roller 2	1	N	D
34	FFPMF1295	Exit Roller Gear	1	N	D
35	FFPLR0342	Ground Spring 6	1	N	D
36	FFPMA06911	Exit Roller 1	1	N	C
37	FFPMB0299	Exit Roller Pulley	1	N	D
38	FFPMN0136	Exit Roller Belt	1	N	D
39	FFPLA0110	Paper Jam Release Knob	1	N	D
40	FFPBL0016	Thermistor	1	N	A
41	FFPMF1325	Heat Roller Gear	1	N	A

Right Cover Section

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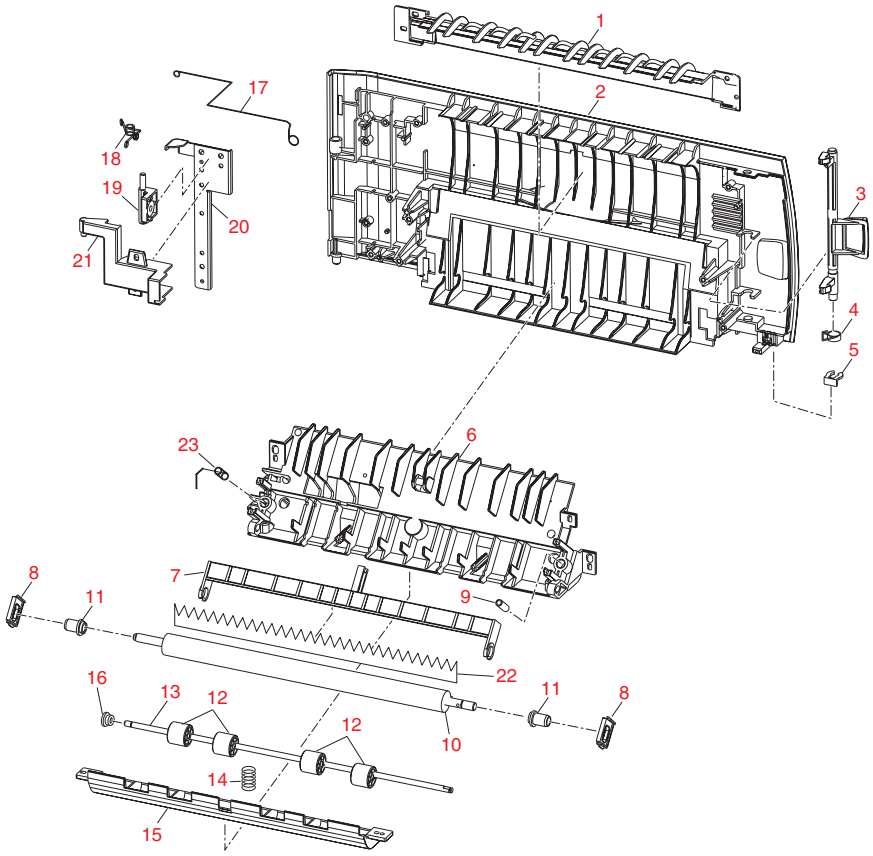

Right Cover Section

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPKF1530	Double Sided Paper Guide 2	1	N	D
2	FFPKE11481	Right Cover ⚠	1	N	D
3	FFPLK03762	Right Cover Latch	1	N	D
4	FFPLR0328	Right Cover Latch Spring	1	N	C
5	FFPFJ0039	Touch Ring	1	N	D
6	FFPKF15273	Double Side Paper Guide Plate	1	N	D
7	FFPKD16382	Discharge Needle Holder	1	N	D
8	FFPKF15311	Transfer Guide	2	N	D
9	FFPLP11781	Transfer Shaft Sponge Terminal	1	N	C
10	FFPMA0677	Transfer Roller	1	N	D
11	FFPMQ0645	Bushing	2	N	D
12	FFPMA06831	Idle Registration Roller	4	N	D
13	FFPLG1756	Idle Registration Roller Shaft	1	N	D
14	FFPLP1188	Registration Pressure Spring	1	N	C
15	FFPKF1535	Bypass Paper Guide	1	N	D
16	FFPMQ0644	Transfer Roller Shaft Bush	1	N	D
17	FFPLP1173	Transfer Roller Ground Spring	1	N	C
18	FFPLR03311	Cover Ground Spring	1	N	C
19	FFPKM03372	Cover Fulcrum	1	N	D
20	FFPKS1250	Cover Ground Plate	1	N	D
21	FFPKE1154	Cable Cover	1	N	D
22	FFPKS1254	Dicharge Needle	1	N	D
23	FFPLP11771	Transfer Pressure Spring	1	N	C

Paper Tray

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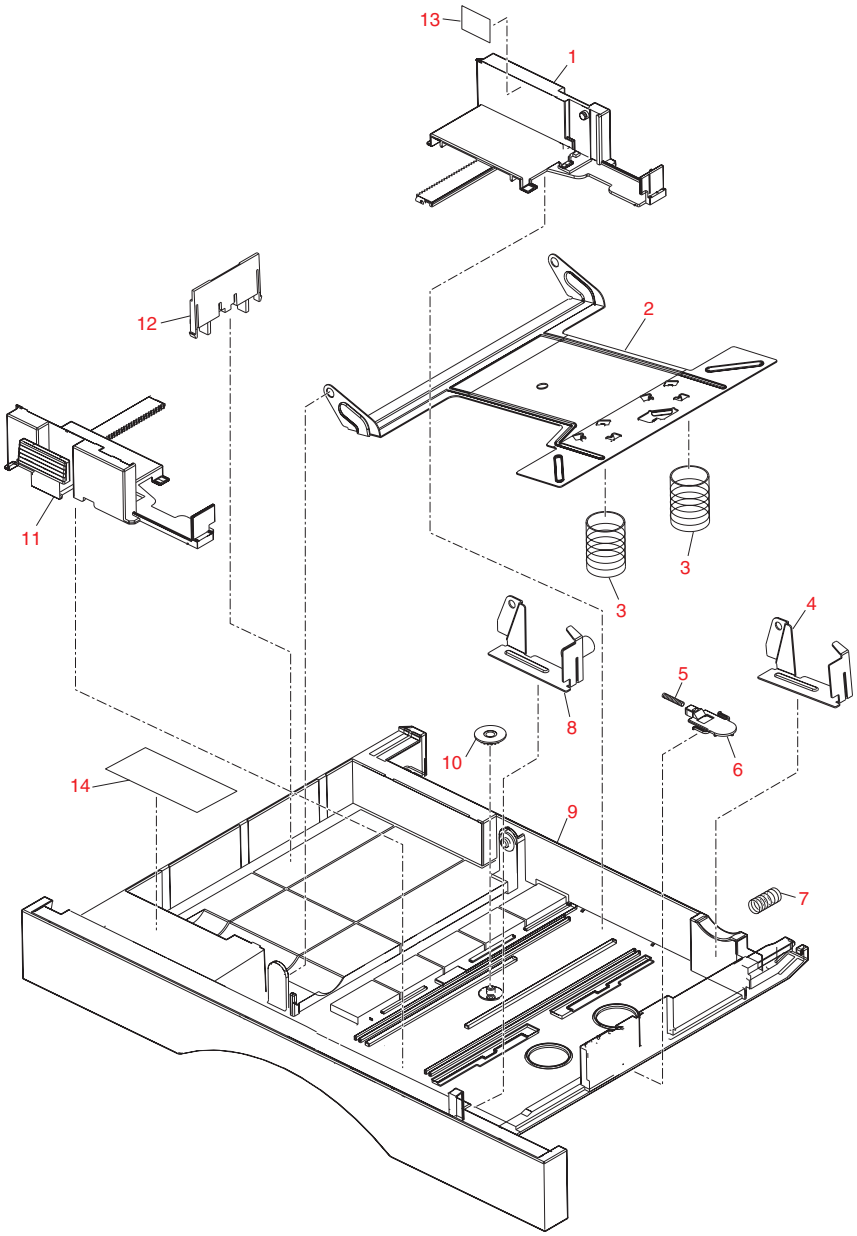

Paper Tray

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
1	FFPKF15392	Paper Tray Guide R	1	N	D
2	FFPXC01S00	Bottom Plate Ass'y	1	N	D
3	FFPLP11901	Pressure Spring	2	N	C
4	FFPLK03902	Separation Nail R	1	N	D
5	FFPLP11921	Stopper Spring	1	N	C
6	FFPKF1540	Bottom Plate Stopper	1	N	D
7	FFPLP1191	Paper Tray Rear Spring	1	N	C
8	FFPLK03892	Separation Nail F	1	N	D
9	FFPQA02054	Paper Tray Frame	1	N	D
10	FFPMF0829	Pinion	1	C	D
11	FFPKF15383	Paper Tray Guide F	1	N	D
12	FFPQG00783	Paper Tray Guide Rear	1	N	D
13	FFPTE1949	Label Upper Label	1	N	D
14	FFPTE2646	Paper Size Setting Label	1	N	D

Sheet Bypass

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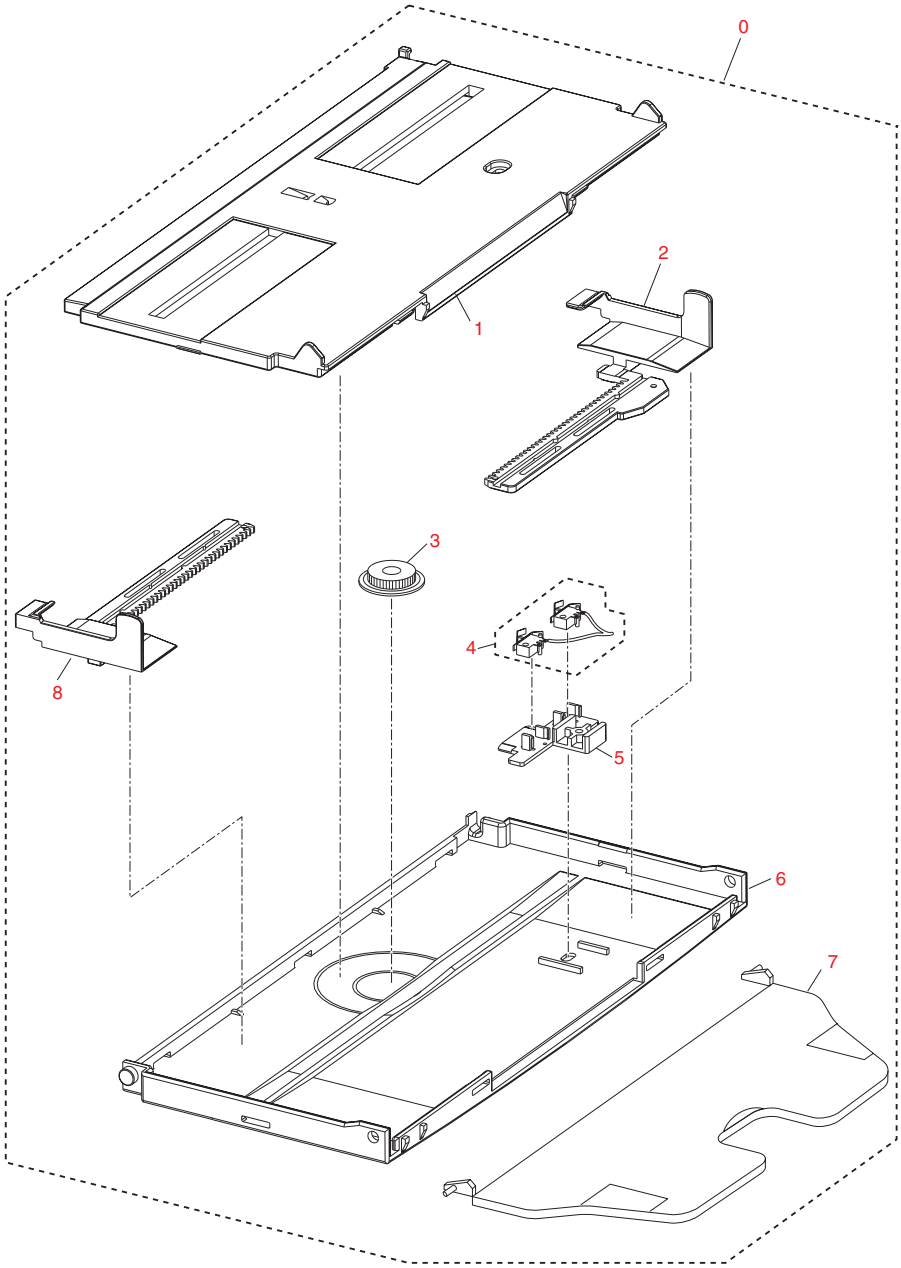
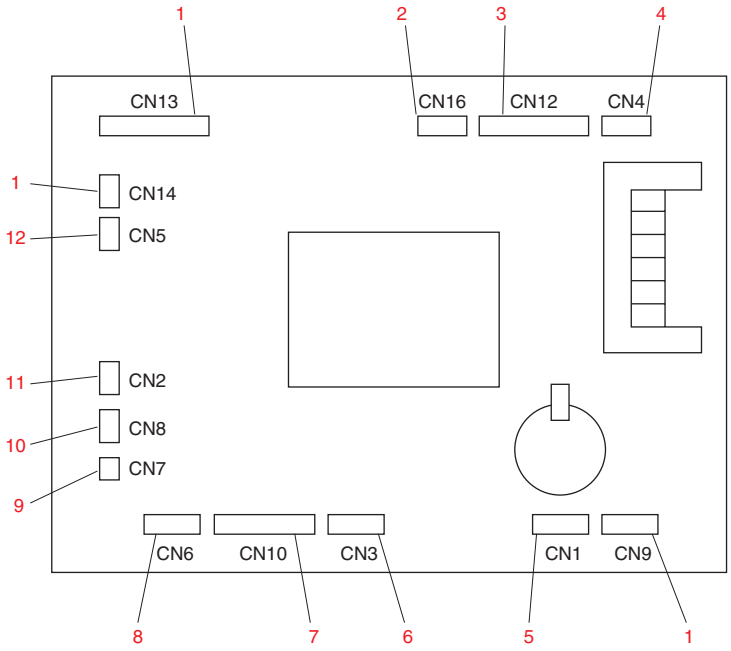


Sheet Bypass

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks
0	FFPUQ90S00	Bypass Tray Ass'y	1	N	D
1	FFPND01694	Bypass Tray Cover	1	N	D
2	FFPKF1536	Bypass Guide F	1	N	D
3	FFPMF0829	Pinion	1	C	D
4	FFPWE0068	Bypass Sensor Ass'y,	1	N	D
5	FFPKR19751	Sensor Mounting Bracket	1	N	D
6	FFPQA02042	Bypass Tray A	1	N	D
7	FFPND01701	Bypass Tray B	1	N	D
8	FFPKF1537	Bypass Guide R	1	N	D


1
2
3
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CN13
CN16
CN12
CN4
1
CN14
12
CN5
11
CN2
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CN8
9
CN7
CN6
CN10
CN3
CN1
CN9
8
7
6
5
1

Cables

Ref. No.	Part No.	Description	Q'ty Per Unit	Com-mon	Remarks	From (CPU)	To
1	FFPWC1909	Power Cable	1	N	D	CN13	LVPS PCB
2	FFPWC1903	Flat Cable 2	1	N	D	CN16, 9, 14	Inverter PCB
3	FFPWC1910	Flat Cable 1	1	N	D	CN12	CCD PCB
4	FFPWC1901	LSU Cable	1	N	D	CN4	LSU
5	FFPWC1896	Sensor Cable	1	N	D	CN1	Paper Exit/Registration/ Paper detecting Sensors
6	FFPWC1897	Solenoid Cable	1	N	D	CN3	Sheet Bypass Pick-up/ Paper Feed/Registration Solenoids and Exhaust Fan
7	FFPWC1898	TEN Cable	1	N	D	CN10	Toner Level/Drum Virgin Detecting Sensors and Discharge Lamp
8	FFPWC1904	Optics Motor Cable	1	N	D	CN6	Optics Drive Motor
9	FFPWC1900	Main Motor Cable	1	N	D	CN7	Main Motor
10	FFPWC1899	High Voltage Cable	1	N	D	CN8	HVPS PCB
11	FFPWC1902	Control Panel Cable	1	N	D	CN2	Control Panel PCB
12	FFPWC1905	Optics Sensor Cable	1	N	D	CN5	Lamp Unit Home Position Sensor

Maintenance Chart

Item	Part	Part number	Maintenance		Remarks
			100k	200k	
Main unit	Ozone filter	FFPHJ0057	◎	◎	
	LSU cover glass	—	△	△	
Transfer unit	Transfer roller	FFPMA0677	◎	◎	
	Discharge needle	FFPKS1254	△	△	
Fuser unit	Heat roller	FFPMA0689	◎	◎	
	Pressure roller	FFPMA06901	◎	◎	
	Pressure roller bushing	FFPMQ0652	◎	◎	
	Heat roller bushing	FFPMQ0653	◎	◎	
	Heat roller gear	FFPMF1325	◎	◎	
	Separation finger	FFPLK0391	◎	◎	
	Thermistor	FFPBL0018	◎	◎	
Paper feed unit	Sheet bypass paper feed roller	FFPMA0684	◎	◎	
	Sheet bypass pick up roller	FFPMA0685	◎	◎	
	DFP roller	FFPMA0517	◎	◎	
	Paper feed roller	FFPXA23S00	◎	◎	
Optics unit	Platen glass Ass'y	FFPXK01S01	△	△	
	Mirror 1	FFPGC0223	△	△	
	Mirror 2	FFPGC0225	△	△	
	Mirror 3	FFPGC0225	△	△	
	Lens	FFPGC0226	△	△	
	Reflecting mirror	FFPGC0224	△	△	

△ : Replacement part due to the durability

◎ : Regular replacement part

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CH48T46	Choke Coil (Except North America)	4	13	1
DNQ12A62R21A	Main Motor	5	1	1
EUKMBN782HA	High Voltage PCB	5	14	1
FFPBL0016	Thermistor	11	40	1
FFPDF0343	Wire Terminal 1	9	10	1
FFPDF0345	Lamp Terminal 1	11	19	1
FFPDF0346	Lamp Terminal 2	11	15	1
FFPDF0347	Conductor Plate 2	11	18	1
FFPDF0348	Conductor Plate 1	11	16	1
FFPDN0025	Magnetic Roller	8	8	1
FFPDU0063	Discharge Brush	11	31	1
FFPET0018	Thermostat	11	17	2
FFPEV0131	Power Cord (for North America)	4	16	1
FFPEV0144	Power Cord (for Europe)	4	16	1
FFPEV0146	Power Cord (for Australia.)	4	16	1
FFPEV0152	Power Cord (for U.K.)	4	16	1
FFPEY0074	Wire	9	5	1
FFPFJ0039	Touch Ring	12	5	1
FFPGC0223	No.1Mirror	7	16	1
FFPGC0224	Reflector Mirror	7	17	1
FFPGC0225	No.2/3 Mirror	7	15	2
FFPGH01051	Drum Sheet	8	15	1
FFPHD0034	Pipe	8	19	1
FFPHG0058	Waste Toner Coil	8	12	1
FFPHJ0057	Ozone Filter	2	10	1
FFPHK1135	Cleaning Blade	8	6	1
FFPHK1136	Mylar 2	9	4	1
FFPHK1151	Rail Sheet Full Speed	6	10	2
FFPHK1152	Rail Sheet Half Speed	6	11	2
FFPHK1164	Mylar 1	9	1	1
FFPHK1169	Mylar	4	25	1
FFPHK1182	Corona Sheet 1	9	15	1
FFPHK1184	Corona Sheet 2	9	16	1
FFPHL0012B	Damper	6	4	1
FFPHP0828	Seal	8	4	2
FFPHP08292	Side Seal, L	8	30	2
FFPHP08302	Side Seal, R	8	5	1
FFPHP08331	Waste Toner Seal	8	29	1
FFPHP0837	Cleaning Sheet	8	16	1
FFPHP0838	Side Seal, F	8	22	1
FFPHP0839	Side Seal, R	8	23	1
FFPHQ0080	Coupling	8	10	1
FFPHS0041	Cleaner Cap	9	14	1
FFPJA0327	Base, F	9	3	1
FFPJA0328	Base, R	9	11	1
FFPJA0329	Terminal Cover, F	9	6	1
FFPJA0330	Terminal Cover, R	9	8	1
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FFPJA0338	LVPS Insulation Sheet	2	9	1
FFPKA0198	Sensor Plate	4	1	1
FFPKB10271	Drum Frame	8	18	1
FFPKB1041	Fuser Frame Upper	11	1	1
FFPKB10422	Fuser Frame Lower	11	23	1
FFPKB1044	Full Speed Frame	7	13	1
FFPKB1045	Full Speed Frame	7	14	1
FFPKB1046	Half Speed Frame F	7	5	1
FFPKB1047	Half Speed Frame R	7	18	1
FFPKB10531	Lens Unit Bracket	6	26	1
FFPKD16382	Dicharge Needle Holder	12	7	1
FFPKD1641	Drum Support, F	8	14	1
FFPKD1642	Drum Support, R	8	9	1
FFPKD1643	Toner Tray	8	17	1
FFPKD16604	Bypass Paper Feed Frame	10	23	1
FFPKD1670	Lamp Holder	7	11	2
FFPKD1671	Belt Holder Full Speed	7	8	2
FFPKD1672	Frame 2/3 Mirror Front	7	3	1
FFPKD1673	Frame 2/3 Mirror Rear	7	21	1
FFPKD1674	Lamp Cable Holder	6	24	1
FFPKD1675	CCD Cable Holder	6	1	1
FFPKD1678	DFP Pressure Plate	4	26	1
FFPKE11481	Right Cover	12	2	1
FFPKE1154	Cable Cover	12	21	1
FFPKE1159	Side Cover R	8	1	1
FFPKE1161	Case	9	2	1
FFPKE11671	Registration Roller Cover	10	35	1
FFPKE11683	Frame Cover	10	25	1
FFPKE11691	Cable Cover	10	9	1
FFPKE1182	LVPS Cover	2	8	1
FFPKF15273	Double Side Paper Guide Plate	12	6	1
FFPKF1528	Cable Guide A	4	20	1
FFPKF1530	Double Sided Paper Guide 2	12	1	1
FFPKF15311	Transfer Guide	12	8	2
FFPKF15345	Middle Frame Paper Feed Guide	10	32	1
FFPKF1535	Bypass Paper Guide	12	15	1
FFPKF1536	Bypass Guide F	14	2	1
FFPKF1537	Bypass Guide R	14	8	1
FFPKF15383	Paper Tray Guide F	13	11	1
FFPKF15392	Paper Tray Guide R	13	1	1
FFPKF1540	Bottom Plate Stopper	13	6	1
FFPKF15422	Fuser Entry Guide	11	22	1
FFPKF1544	Exit Paper Guide 1Upper	11	30	1
FFPKF15452	H/R Separation Paper Guide	11	2	1
FFPKF15502	Paper Exit Gear 2 Upper	11	27	1
FFPKF1561	Cable Guide 2	7	4	1
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FFPKM0339	Shutter	8	20	1
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FFPKM0342	Scanner Slider	7	6	4
FFPKN0035	Coupler	4	3	2
FFPKN0415	Side Sponge, F	8	21	2
FFPKP0106	Heat-insulating Felt	11	21	1
FFPKR1957	High Voltage PCB Plate	5	15	1
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FFPKR1971	Sensor Plate	10	28	1
FFPKR1973	Bypass Paper Bracket	10	24	1
FFPKR19751	Sensor Mounting Bracket	14	5	1
FFPKR1977	Power Cord Bracket	4	12	1
FFPKR1986	Motor Bracket	6	5	1
FFPKR1989	Bottle Rotation Sensor Bracket	6	29	1
FFPKS1250	Cover Ground Plate	12	20	1
FFPKS1254	Dicharge Needle	12	22	1
FFPKS1257	Grid	9	7	1
FFPKS12591	Right Lock Plate	4	5	1
FFPKU0202	Support Stay	4	7	1
FFPLA0110	Paper Jam Release Knob	11	39	1
FFPLA01132	Developer Pressure Knob	8	27	1
FFPLB0211	Key Top D	3	3	1
FFPLB0215	Copy Mode Key	3	9	1
FFPLB02161	Option Key Top	3	8	2
FFPLG1756	Idle Registration Roller Shaft	12	13	1
FFPLG1762	Pick-Up Roller Shaft	10	21	1
FFPLG1775	Drive Shaft	6	14	1
FFPLG1779	DFP Roller Shaft	4	22	1
FFPLJ01123	Cam	10	20	1
FFPLK03762	Right Cover Latch	12	3	1
FFPLK03862	Sensor Arm	10	30	1
FFPLK03871	Ratchet Finger A	10	16	1
FFPLK03892	Separation Nail F	13	8	1
FFPLK03902	Separation Nail R	13	4	1
FFPLK0391	Separation Finger	11	6	3
FFPLK0394	Wire Tension Arm F	6	23	1
FFPLK0395	Wire Tension Arm R	6	22	1
FFPLL0664	Right SW Lever	4	8	1
FFPLL0665	Right SW Support Lever	4	10	1
FFPLL06711	Sensor Lever A	10	38	1
FFPLL0672	Sensor Lever B	10	29	1
FFPLL0679	Paper Exit Sensor Lever 2	11	25	1
FFPLL0684	Cleaner Lever	9	12	1
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FFPLP11671	Terminal Spring (Grid)	5	19	1
FFPLP11681	Terminal Spring (Charge)	5	20	1
FFPLP11691	Terminal Spring (Bias)	5	18	1
FFPLP1173	Transfer Roller Ground Spring	12	17	1
FFPLP11771	Transfer Pressure Spring	12	23	1
FFPLP11781	Transfer Shaft Sponge Terminal	12	9	1
FFPLP1179	Shutter Spring	8	26	1
FFPLP1180	Spring	9	9	1
FFPLP1188	Registration Pressure Spring	12	14	2
FFPLP11901	Pressure Spring	13	3	2
FFPLP1191	Paper Tray Rear Spring	13	7	1
FFPLP11921	Stopper Spring	13	5	1
FFPLP11991	Pressure Spring	11	12	2
FFPLP1200	Hinge Spring	11	24	3
FFPLP1209	Spring	5	3	1
FFPLP1215	Motor Tension Spring	6	6	1
FFPLP1216	Wire Tension Spring	6	19	2
FFPLP12251	DFP Pressure Spring	4	24	2
FFPLQ0496	Developer Bias Terminal Plate	8	2	1
FFPLQ05011	Lock Plate Spring	4	6	1
FFPLQ0507	No.1Mirror Spring F	7	7	2
FFPLQ0508	No.1Mirror Spring R	7	2	1
FFPLQ0509	2/3 Mirror Spring F	7	22	2
FFPLQ0510	2/3 Mirror Spring R	7	1	2
FFPLR0327	Lever Return Spring	4	9	1
FFPLR0328	Right Cover Latch Spring	12	4	1
FFPLR03311	Cover Ground Spring	12	18	1
FFPLR03342	Clutch Spring A	10	11	1
FFPLR03361	Clutch Spring	10	4	2
FFPLR0339	Ground Spring 2	11	3	1
FFPLR03402	Ground Spring 3	11	7	1
FFPLR0342	Ground Spring 6	11	35	1
FFPLR0348	Spring Paper Jam	11	4	2
FFPLT0140	Sleeve	10	3	1
FFPLT0141	Ratchet Sleeve D	10	7	1
FFPLT01431	Ratchet Sleeve B	10	19	1
FFPLU00842	Clutch Boss	10	2	2
FFPLU00852	Bypass Clutch Boss	10	12	1
FFPMA0517	DFP Roller	4	21	1
FFPMA0677	Transfer Roller	12	10	1
FFPMA0682	Registration Roller	10	34	1
FFPMA06831	Idle Registration Roller	12	12	4
FFPMA0684	Bypass Paper Feed Roller	10	31	1
FFPMA0685	Bypass Pick-Up Roller	10	22	1
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FFPMA06921	Exit Roller 2	11	33	1
FFPMA06951	Pinch Roller	11	29	4
FFPMB0240	Half Speed Drive Pulley	6	12	1
FFPMB0299	Exit Roller Pulley	11	37	1
FFPMB0300	Half Speed Pulley	7	20	2
FFPMB0301	Idle Pulley	6	20	2
FFPMB0302	Wire Tension Pulley	6	27	1
FFPMD0027	Wire Drum	6	13	2
FFPMF0829	Pinion	13	10	1
FFPMF0829	Pinion	14	3	1
FFPMF1280	Drum Gear B	5	5	1
FFPMF1281	Main Gear	5	6	1
FFPMF1282	Drum Gear A	5	7	1
FFPMF1283	Registration Gear	5	4	1
FFPMF1284	Screw Gear	5	11	1
FFPMF1285	Fuser Idle Gear A	5	9	1
FFPMF1286	Fuser Idle Gear B	5	10	1
FFPMF1287	Paper Exit Gear	5	12	2
FFPMF1295	Exit Roller Gear	11	34	1
FFPMF1297	Magnetic Roller Gear	8	7	2
FFPMF1301	Idle Gear 3	8	3	1
FFPMF1303	Screw Gear 1	8	24	1
FFPMF1313	Clutch Gear	10	5	1
FFPMF1314	Registration Clutch Gear	10	8	1
FFPMF1319	Bypass Paper Feed Gear B	10	27	1
FFPMF1320	Bypass Clutch Gear	10	10	1
FFPMF1321	Cam Clutch Gear	10	18	1
FFPMF1325	Heat Roller Gear	11	41	1
FFPMF1329	Motor Drive 2wer Gear	6	7	1
FFPMF1330	Motor Gear	6	2	1
FFPMF1332	Registration Roller Gear	10	33	1
FFPMN0136	Exit Roller Belt	11	38	1
FFPMN0150	Motor Belt	6	8	1
FFPMQ0526	Bearing	6	21	1
FFPMQ0540	Bearing	6	15	1
FFPMQ0540	Bearing	7	19	2
FFPMQ0569	Bushing	4	23	2
FFPMQ0644	Transfer Roller Shaft Bush	12	16	1
FFPMQ0645	Bushing	12	11	2
FFPMQ0646	Bushing	8	11	1
FFPMQ0647	Bushing	8	13	1
FFPMQ0648	Bushing 1	10	13	1
FFPMQ0649	Bushing 2	10	6	3
FFPMQ0650	Bushing 3	10	1	1
FFPMQ0652	Pressure Roller Bushing	11	13	2
FFPMQ0653	Heat Roller Bushing	11	10	2
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FFPMV0051	Polyslider	5	8	1
FFPMW0050	Scanner Wire R	6	17	1
FFPMW0051	Scanner Wire F	6	18	1
FFPNA07471	Protection Cover	4	4	1
FFPNA07482	Front Cover	2	4	1
FFPNA07492	Left Upper Cover	2	5	1
FFPNA0750	Right Upper Cover	2	3	1
FFPNA07512	Rear Cover	2	2	1
FFPNA07522	Paper Exit Cover	2	6	1
FFPNA07531	Paper Exit Support Guide	2	7	1
FFPNA0754	Control Panel Cover	3	2	1
FFPNA0755	Platen Cover	1	1	1
FFPNA07572	Control Panel Guide Cover	1	3	1
FFPMF1298	Idle Gear 1	8	33	1
FFPMF1299	Idle Gear 2	8	32	1
FFPMF1300	Gear 1	8	31	1
FFPNA0758	Control Panel Rear Cover	3	6	1
FFPND01681	Sensor Cover	10	26	1
FFPND01694	Bypass Tray Cover	14	1	1
FFPND01702	Bypass Tray B	14	7	1
FFPNH0074	Platen Hinge	2	1	1
FFPPA04569	Control Panel Indication Plate V	3	1	1
FFPQA02042	Bypass Tray A	14	6	1
FFPQA02054	Paper Tray Frame	13	9	1
FFPQG00783	Paper Tray Guide Rear	13	12	1
FFPTE1949	Label Upper Label	13	13	1
FFPTE2646	Paper Size Setting Label	13	14	1
FFPUQ90S00	Bypass Tray Ass'y	14	0	1
FFPUT01S01	Fuser Unit	11	0	1
FFPWB0667	PCB Control Panel	3	5	1
FFPWB06691	PCB AC/DC Driver	4	11	1
FFPWB0670	Discharge LED	4	19	1
FFPWC1896	Sensor Cable	15	5	1
FFPWC1897	Solenoid Cable	15	6	1
FFPWC1898	TEN Cable	15	7	1
FFPWC1899	High Voltage Cable	15	10	1
FFPWC1900	Main Motor Cable	15	9	1
FFPWC1901	LSU Cable	15	4	1
FFPWC1902	Control Panel Cable	15	11	1
FFPWC1903	Flat Cable 2	15	2	1
FFPWC1904	Optics Motor Cable	15	8	1
FFPWC1905	Optics Sensor Cable	15	12	1
FFPWC1909	Power Cable	15	1	1
FFPWC1910	Flat Cable 1	15	3	1
FFPWC1922	AC Cable	4	14	1
FFPWE0068	Bypass Sensor Ass'y,	14	4	1
FFPXA02S00	Main Motor Frame Ass'y	5	2	1
FFPXA12S00	LSU Ass'y	4	18	1

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FFPXA23S00	Paper Feed Roller Ass'y	10	37	2
FFPXB01S01	Control Panel Ass'y	3	0	1
FFPXC01S00	Bottom Plate Ass'y	13	2	1
FFPXG05S01	Waste Toner Bottle Ass'y	8	28	1
FFPXG64S00	Corona Ass'y	9	0	1
FFPXK01S01	Platen Glass Ass'y	1	2	1
FFPXK02S00	CCD PCB Ass'y	6	25	1
FFPXQ02S001	Solenoid Bracket C Ass'y	10	15	1
FFPXQ04S00	Paper Feed Roller Shaft Ass'y	10	36	1
FFPXQ05S00	Bypass Paper Feed Roller Shaft Ass'y	10	14	1
GP1A73A	Sensor	4	2	1
GP1A73A	Sensor	6	28	1
GP1A73A	Sensor	10	39	2
GP1A73A	Sensor	11	26	1
HCSN8PYG318	Optics Lamp	7	10	1
KH39FM2-007	Scanner Motor	6	3	1
NC176F63512	AC Inlet	4	15	1
QIR120800MDB	Lamp	11	8	1
TDS-06A-84	Solenoid	10	17	1